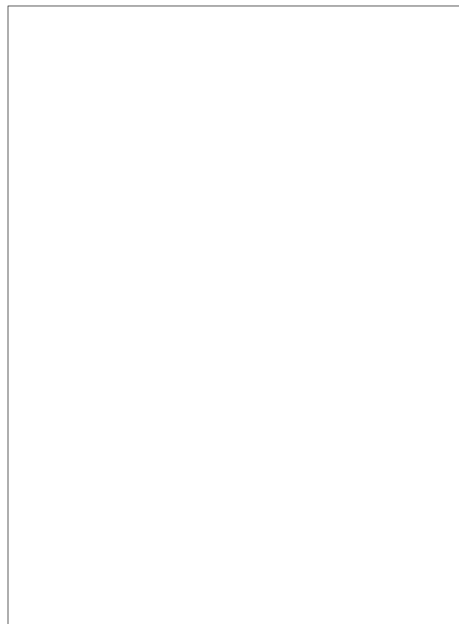


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2 of 10

**NPIC DATA SYSTEM  
DATA AND CONTROL SEGMENT  
ACQUISITION PHASE**

**VOLUME VII  
MANAGEMENT PROPOSAL  
QUESTIONS AND ANSWERS**



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**31 March 1982**

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## CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
VIII	CORPORATE COMMITMENT	2
IX	PROJECT MANAGEMENT	24
X	PROJECT PLANS	40
XI	PROGRAM CONTROL	59
XII	PERSONNEL	60
XIII	EXPERIENCE AND PAST PERFORMANCE	115

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## ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>	
VIII.1-1	Requirements and Space Available	2	
VIII.3-1	SCIF Occupancy Plan	5	
VIII.4-1	<div></div> Organization Structure	7	STAT
VIII.9-1	SCIF TEMPEST Areas	14	
IX.1-1	Government Informal Training Requirements	25	
IX.2-1	Hardware Activity Schedule	28	
IX.6-1	Subcontractors' Responsibilities	33	
IX.8-1	CSD and SI Support Requirements (Man Months)	36	
X.3-1	O&M Organization	44	
X.3-2	<div></div> O&M Staffing	45	STAT
X.3-3	CSD O&M Staffing	46	
X.3-4	Contractor-Staffed O&M Plan	47	
XII.3-1	Actual Versus Planned Staffing for SPDC, DSM & CAMS	64	
XII.8-1	Staffing/Clearance Summary	71	
XII.8-2	<div></div> Skill/Level Allocation	72	STAT
XII.8-3	<div></div> Skill/Level Allocation	73	STAT
XII.8-4	<div></div> Skill/Level Allocation	74	STAT
XII.8-5	<div></div> Skill/Level Allocation	75	
XII.16-1	<div></div> Personnel Assignments	84	
XII.17-1	Ongoing Projects	113	
XII.17-2	Proposed Projects	114	
XIII.1-1	Related Experience Comparison	117	

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MANAGEMENT PROPOSAL

QUESTIONS AND RESPONSES

This volume responds to the questions received from the Government  
on March 17, 1982.

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VIII.1. Please show that the existing and new office space will be sufficient to house the required number of personnel at project start and at project peak.

Answer:

Our facility standards require 96 square feet (8' x 12') for "A" level personnel, and 48 square feet for all others. The D/C Segment staffing requirements, as summarized in Figure 6.2-6 of the management proposal, show that 50% of the staff is "A" level and 50% below. Figure VIII.1-1 summarizes the staffing, space requirements and space availability for project start and project peak, indicating that there is adequate office space in the [ ] facility for the projected D/C Segment staffing. STAT

Requirements				Available Space (sq. feet)					
Event	Date	Staffing Requirement	Office Space Requirement	Existing SCIFs		New SCIF		Total	
				Office	Other	Office	Other	Office	Other
Project Start	5/82	166	11952	5830	4950	6500	1000	12330	5950
Project Peak	11/82	380	27360	—	—	34460	14940	34460	14940

Figure VIII.1-1. Requirements and Space Available

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VIII.2 Please describe the  facilities dedicated to the D/C Segment.

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Answer:

The  facilities dedicated to the D/C Segment consist of 10,000 square feet of floor space in the  This is the area where the Basic IWS is integrated with the Video portion. This size area is required due to the large number of units to be integrated. The staging area is approximately 8,500 square feet and the test and integration area is approximately 1,500 square feet.

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VIII.3. *What are the phasing plans for the new SCIF?*

Answer:

The SCIF phasing plans are shown in Figure VIII.3-1. Note in the figure the addition of another office area on March 1, 1983. Because of the growth of computer and terminal room requirements, this area has been added to the facility plan since the submission of the proposal.

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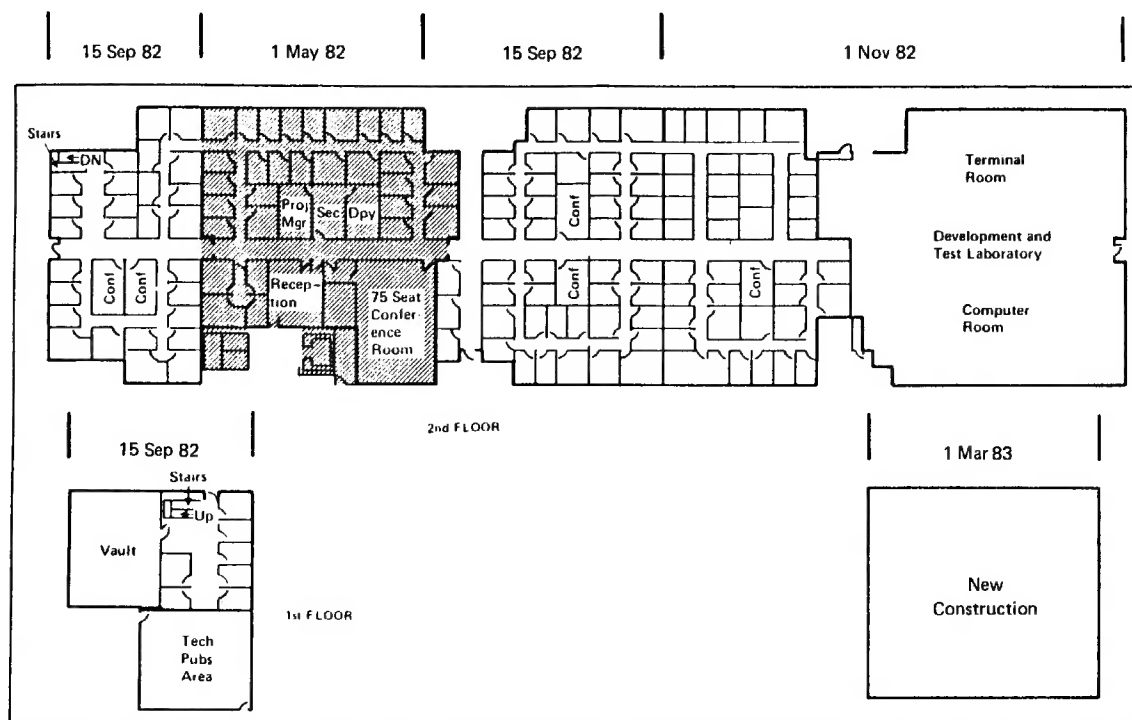


Figure VIII.3-1. SCIF Occupancy Plan

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VIII.6     *How does this project compare in size, dollars, manhours, resource needs, etc., to the other  projects designated as SIUs?*

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Answer:

The following comparisons reflect the NDS Project relationship to the other  projects:

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<u>Project</u>	<u>Software Size</u>
NDS	900K SLOC
LAMPS (DT&E)	3000K SLOC
LAMPS (Prod'n)	N/A
MGT	N/A
GPS	600K SLOC
DSM	850K SLOC
FAA	N/A

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The LAMPS (Prod'n) and MGT projects are production programs. The FAA Project is in the early competitive procurement phase and thus, no data is available.

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VIII.7 *Are there any projects in the corporate structure that are of equal or higher priority and which could compete for resources with this project? Which are they?*

Answer:

Each of the existing SIU projects - DSP, GPS, DSM, LAMPS, and FAA Air Traffic Control - is of high national interest and, as such, receives top management attention and priority with regard to resource allocation. The NDS Project is similarly deemed to be of highest national interest and, as such, will compete equally with the other SIU projects.

Our  planning process has allocated adequate resources for each of these SIU programs. If a need for unplanned resources arises, other lower priority new business opportunities and discretionary activities provide a comfortable reserve of resources from which to draw.

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VIII.8 *To what level in the corporation does this project go to obtain approval for additional space, manhours, dollars, and equipment resources?*

Answer:

The NDS Project obtains approval for space, manhours, dollars, and equipment resources from the [REDACTED]

[REDACTED] (Question #4 in this section addresses the reporting and control relationships). [REDACTED] controls these resources for all [REDACTED]

[REDACTED] projects, totalling over 1200 employees. If a request is not handled to the satisfaction of [REDACTED] the NDS Project

Manager, he can appeal to his immediate manager, the Vice President

[REDACTED] has full control

and authority to arbitrate and resolve problems within his business area of approximately 3000 employees. If [REDACTED] requires division

support from beyond his area [REDACTED] can provide

access to an additional 8000 employees and related resources.

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VIII.9. *Please identify that portion of the facility to be TEMPEST certified.*

Answer:

The cross-hatched areas in Figure VIII.9-1 will be TEMPEST certified. In addition, the 3,000 square foot computer room to be used from May to November 1982 (not shown in the figure) is currently NSA TEMPEST certified.

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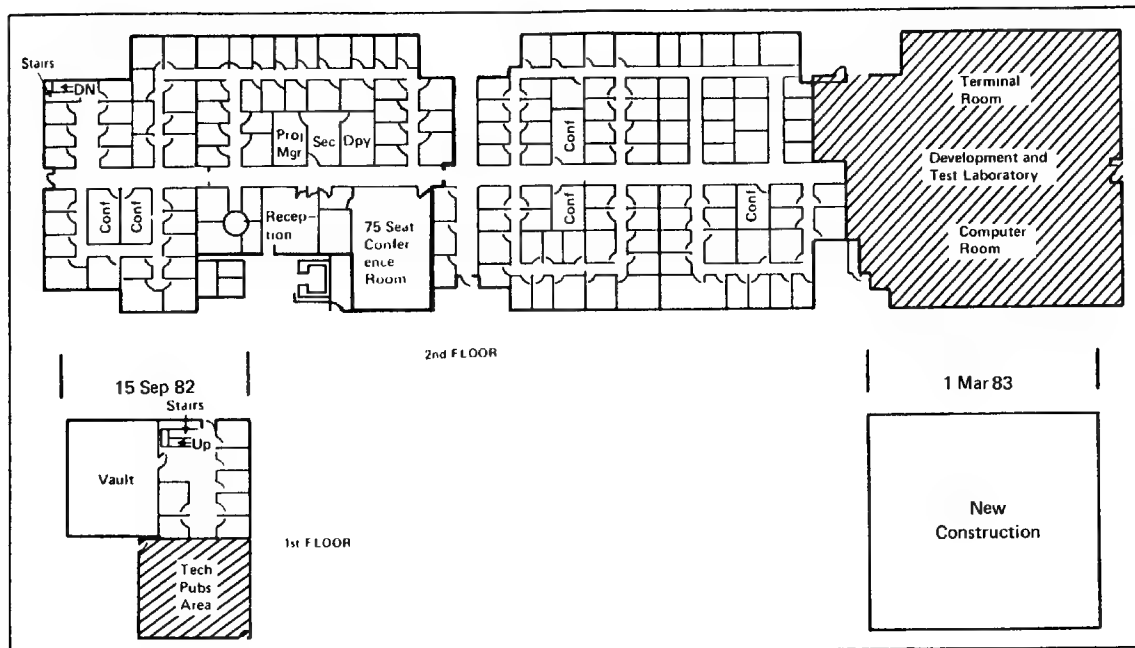


Figure VIII.9-1. SCIF TEMPEST Areas

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VIII.10 *Is the ZIRPEL DTL dedicated to D/C Segment?*

Answer:

Yes. The Development and Test Laboratory (DTL), formerly assigned to the ZIRPEL project, will be assigned and dedicated to the D/C Segment project from 15 April 1982 until the new DTL is operational on 1 November 1982. The ZIRPEL Project will vacate the DTL during the first week of April 1982.

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VIII.11 *In the use of the ZIRPEL DTL, are there any special security requirements to be concerned with?*

Answer:

No. This DTL is currently an approved Tempest qualified area and no major modification is required for dedicated D/C Segment use. Our ADP Security Plan has been updated to reflect for D/C Segment operations in this DTL. D/C Segment security procedures for this DTL have been discussed with Agency Security Personnel. Agency personnel have inspected the DTL and have been briefed on our plans for use of this area.

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VIII.12 *Describe the equipment available for use to the D/C Segment in the ZIRPEL DTL.*

Answer:

When the ZIRPEL Project vacates the DTL area in April, no ZIRPEL equipment will remain. This Tempest qualified area will only house D/C Segment equipment.

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*VIII.13 How close is the ZIRPEL DTL to the new and old work areas?*

Answer:

The new work area is one floor directly above the ZIRPEL DTL. Three of the existing work areas are in the same building as the DTL; two of these work areas are on the same floor. Walk time is a maximum of two minutes. The other two existing work areas are in an adjacent connected building on the same floor. Walking time is a maximum of three minutes.

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VIII.14 *Other than the MAC and TAC, are there any groups specifically tasked to uncover problems? If so, how often do they meet/review?*

Answer:

[ ] management, following normal procedures, is responsible for early identification of potential problems. [ ] management procedures include analysis of technical, cost and schedule data, reviews at weekly and monthly status meetings, and subcontractor status reviews. Reviews are conducted by all levels of D/C project management and by Division and [ ] executive management. In addition, [ ] the D/C Segment project manager, may call for a project audit at any time.

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Our Quality Assurance organization is responsible for assuring that our delivered products meet contractual requirements and [ ] own standards. QA personnel have the authority and the organizational independence to identify and assess quality problems, and to initiate, recommend, and provide solutions. They report through a separate management chain to the [ ] President.

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Within 90 days of contract start, an independent divisional team of key management and technical individuals will conduct a Program Control Review (PCR). This highly qualified team assesses plans and status and reports the results to [ ] Issues will be discussed directly with Project Manager [ ]

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VIII.15 *To what level in the corporate structure are problems visible? Under what conditions do they become visible to the corporate level and what are the mechanisms for tracking them?*

Answer:

Problems and potential problems are assigned and tracked as action items through the Project Control Management Plan with full NDPO and division management visibility. Action Item status is normally reviewed weekly, but daily reviews are directed when necessary.

Problems or potential problems that require resources or support beyond those of the D/C Segment Project Manager are surfaced to [redacted] the Vice President [redacted] the General Manager, [redacted] (See the organizational discussion in the response to Question VIII.4.) D/C Segment status will be visible to the [redacted] who is part of the [redacted] corporate structure. Only problems requiring resources beyond [redacted] control are surfaced to the [redacted] President for resolution. Rarely is it necessary to resolve problems beyond the Division level. Problems on the NPIC Project which reflect a potential for technical inability to meet contract requirements or problems which would result in potential excessive overrun would be elevated up the Corporate management structure. If this is ever required, [redacted] meets with Group or Corporate executive management.

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VIII.16 *Has office space been identified for Government personnel who will be frequently working with you at your facility?*

Answer:

Yes. Office space is planned for ten Government personnel inside the D/C Segment SCIF. Additional space will be provided if needed.

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VIII.17 *Have you made provisions for secure communications from the project to the NDPO? To the SI facility?*

Answer:

TWX capability is operational to the NDPO and the SI facility now.

☐ facility planning provides space and conduits for other types of secure communications (e.g., secure FAX, secure voice) that may be authorized by NDPO.

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VIII.18 *Who sponsored, reviewed and signed off for D/C Segment related IR&D work?*

Answer:

D/C Segment related IR&D work was initiated by the D/C Segment Project Manager. The IR&D tasks were reviewed by the Technical Planning staff and approved by the General Manager [redacted] Next, they were reviewed and approved by the [redacted] Technology Staff which acts for the [redacted] President. No Government review or scoring of the D/C Segment IR&D has yet occurred.

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PROJECT MANAGEMENT

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IX.1      *Please elaborate on the training you anticipate the government will provide to you in the early stages of the contract.*

Answer:

We expect no formal training from the government in support of the development effort. We have identified lists of GFE materials (Volume II, Section 9) which will be the primary basis for our gaining additional familiarity and insight into the existing NPIC System and Operations. We will additionally interface with the NDPO, CSD, and the SI, as required, to gain additional insight or clarification. This informal interchange will occur on an on-going basis. During the early months of the SAP, we would like to receive informal overviews (training) from NPIC personnel. Figure IX.1-1 reflects the level of informal training that we envision.

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Subject	Objective	Schedule	Duration (Hrs)	Personnel	Location
Facility & Security Orientation	General Orientation	May 82	16	15	NPIC
		Jun 82	16	15	NPIC
		Jul 82	16	15	NPIC
Operations Orientation	User Level	Jun 82	40	10	NPIC
System Level Training	Design Details	May 82	16	15	NPIC
		Jul 82	16	15	NPIC
Software Training	Orientation Details	May-Jul 82	Consulting	—	NPIC
• UNIVAC Products					
• Applications Program					
• Data Base	Organization Details	May-Jul 82	Consulting	—	NPIC
	Organization/Maintenance	May-Jul 82	Consulting		NPIC
Test & Transition System Application Data Base	Detailed/Demo	Jul-Aug 82	16	10	NPIC
Operator Training	Detail OJT	Oct 82	24	2	NPIC
		Nov 82	40	2	
Configuration Controls	Orientation	Jun 82	8	10	NPIC
Software Maintenance	Orientation	Oct 82	16	10	NPIC

Figure IX.1-1. Government Informal Training Requirements

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IX.2 *Please indicate any critical path activities that have been assigned to subcontractors and what plans/reviews have been established to protect the schedules in terms of these activities.*

Answer:

The critical paths activities for the SAP development effort are:

- a. Software Design
- b. Coding
- c. Unit Testing
- d. Problem Evaluation and Correction (PEAC).

Our experience has shown that these activities are key within a major software development effort. Test and Verification and Installation/Checkout/Test are excluded because these activities are gated by PEAC.

will perform the majority of the software development effort, implementing the key controlling CPCIs within the total segment.

STAT

We have assigned software development tasks to each subcontractor by CPCI. No individual subcontractor will inhibit the development effort of others up to CPCI FQT due to the CPCI independence. After that point, each subcontractor retains a PEAC responsibility, with  controlling and monitoring the overall testing and segment acceptance effort.

STAT

To ensure that each subcontractor does meet his schedule commitments, we are requiring each to use the  development methodology and procedures. These techniques demand careful development planning (PMCP definitions) and continual development status reporting (PMCP updates) and reviews

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(design/code inspections). After Unit Testing Completion, the PMCP becomes a powerful tool for tracking and assessing program trouble report status. With this approach, we feel that all critical path activities will receive the proper focus.

From a hardware standpoint, because our IWS is made up of off-the-shelf components, we do not consider it to be on the critical path. Nevertheless we have established a detailed activity network as part of our hardware development plan (see Figure IX.2-1). We plan to use program control and management systems we have put in place for technical performance, schedule, cost monitoring. These will include regular weekly and monthly meetings as well as reports. Technical reviews will be scheduled to prepare for and track major program deliverables and events including PDRs, CDRs, Design, Prototype building on Test, Product build, integration and test. More detailed schedules for all of these activities will be included in our Segment Development Plan.

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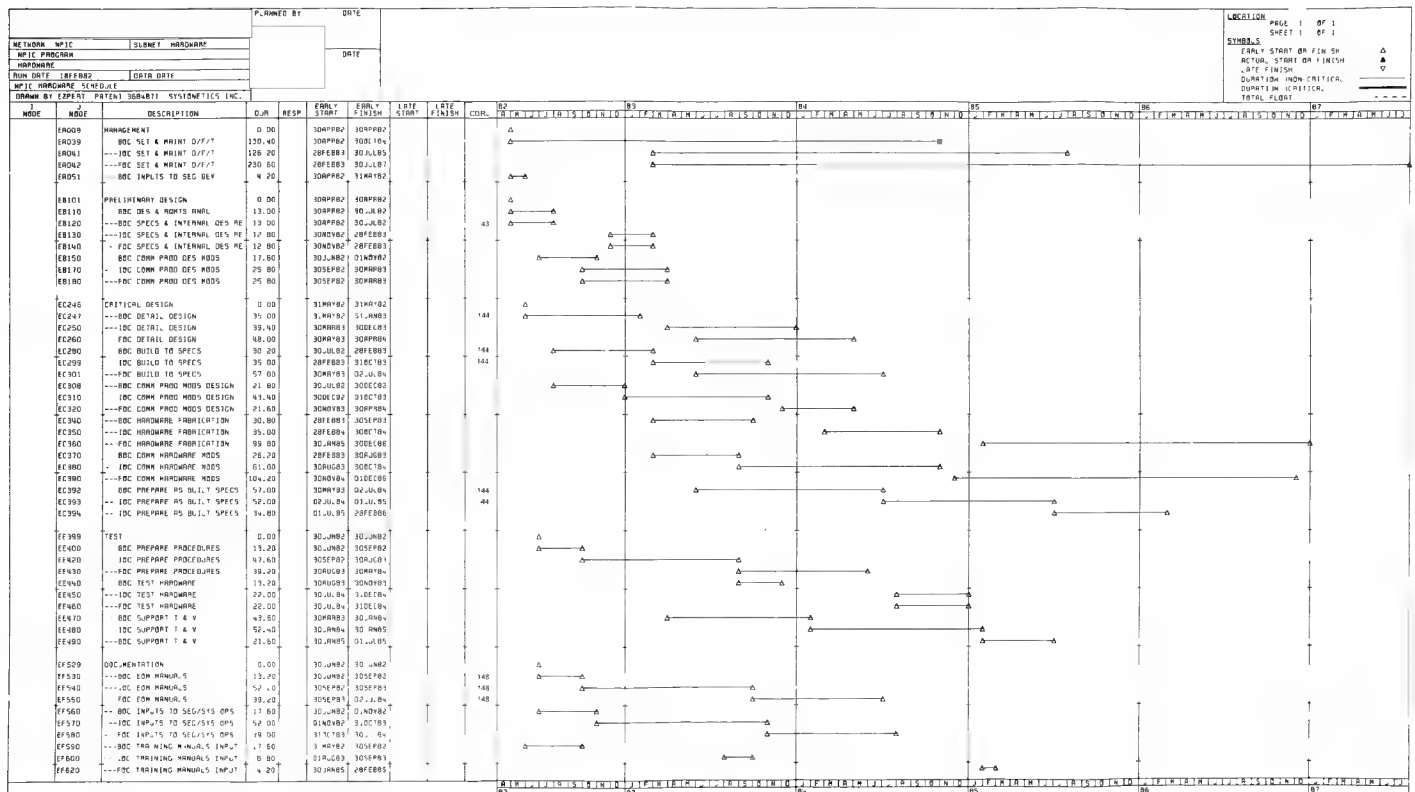


Figure IX.2-1. Hardware Activity Schedule

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IX.3      *What are the proprietary aspects of having a UNIVAC system installed at an [ ] facility? Please discuss the impacts these will have on you.*      STAT

Answer:

From the [ ] perspective, the only potential proprietary issue associated with the installation of UNIVAC hardware and software on [ ] premise would be the requirement for [ ] to gain access to UNIVAC source code or any other proprietary software packages. To the extent that this code is considered proprietary to UNIVAC, [ ] and UNIVAC would need to enter into a standard Proprietary/Confidential Information Exchange Agreement which would permit [ ] to gain access to the code. We do not currently envision a need for this agreement.      STAT  
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IX.4      *Please provide rationale for the security plan (CDRL 105)  
being developed by the project control office vice the security  
office.*

Answer:

This is an error. The security plan (CDRL 105) is being developed by  
the security office.

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IX.5      *What visibility will be provided to the NDPO into the subcontractors status in terms of cost, schedule and internal design reviews?*

Answer:

The NDPO will have the same visibility into the subcontractor activities as it will into  In addition to all formal reviews, the customer will be offered copies of all subcontractor generated documents and will be invited to all informal project and technical reviews. Subcontractor costs will be generated in a PCMS format which can be made available to the customer.

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IX.6 *Please describe the role of the subcontractor monitor vs. the functional managers in regards to the responsibilities of the subcontractors.*

Answer:

The relationship between the Subcontract Acquisition Manager and the functional managers is that of a balanced team. The Subcontract Acquisition Manager is responsible in a business sense for the performance, cost and schedule control of the subcontractors. The functional managers are responsible for the technical excellence of the product that goes to the customer. Figure IX.6-1 identifies the [ ] technical responsible manager for each subcontractor activity. They interface with the subcontractors giving technical guidance. However, only the Subcontract Acquisition Manager has the authority to issue contractual binding directives through Procurement to the Subcontractors.

STAT

An example of how the organization functions can be seen in Systems Engineering. [ ] will develop the Segment Specification. This will serve as the basic requirements document for the subcontractors. The subcontractors will then develop Part I and Part II Specs for their particular CPCI or CI. [ ] System Engineering organization, in conjunction with the Subcontract Acquisition Team, will monitor progress, attend reviews and finally approve the Part I Specifications. Similarly [ ] Software Development organization, in conjunction with the assigned Subcontract Acquisition Team, will provide software technical guidance, approve the Part II Specifications, and monitor subcontractor progress through CPCI development.

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Subcontractor SOWs Clearly Delineate Measurable Tasks and End Products.

SUBCONTRACTOR	ACTIVITY	CDRL #	CDRL NAME	TECHNICAL INTERFACE
	System Engineering	116 133 135 136 141 141	Segment Operations Concept Segment Operations Spec Users Manual Operators Manual BMANIP Part 1 Spec BTDEV Part 1 Spec	System Engineering
	Software Development	138 138 142 142 145 145 150 150	BMANIP Programmers Manual BTDEV Programmers Manual BMANIP Part 2 Spec BTDEV Part 2 Spec BMANIP Data Dictionary BTDEV Data Dictionary BMANIP CPCI BTDEV CPCI	Software Development
	Test & Verification	131 154	Test Plans Segment Test Report	Integration Test & Transition
	Installation-Checkout & Test	115 134 139 147	Segment Transition & Integration Plan Segment Installation Plan Facility I.D.R.S Segment Shipping Plan	Integration Test & Transition
	Maintenance (UNIVAC System)	N/A	UNIVAC System/Software Support	Development & Test Lab
	Training	140 146 N/A N/A N/A	Segment Training Plan Segment Training Materials User Training Operator Training Maintenance Training	Integration Test & Transition
	Operations & Maintenance (BMANIP, BTDEV)	123 124 N/A N/A	Operations & Maintenance Plan Maintenance & Logistics Plan Problem Trouble Reports CCB Assessments	Integration Test & Transition
	System Engineering	119 141 155 N/A	Requirements Traceability & Verification Matrix BEPRE Part 1 Spec Technical Performance Measurements Design Validation Report	System Engineering
	Software Development	138 142 145 150	BEPRE Programmers Manual BEPRE Part 2 Spec BEPRE Data Dictionary BEPRE CPCI	Software Development
	Operations & Maintenance (BEPRE)	N/A N/A	Problem Trouble Reports CCB Assessments	Integration Test & Transition
	System Engineer	141 141	WAPPLS Part 1 Spec WSYSTEM Part 1 Spec	System Engineering
	IWS Hardware Development	(CI) (CI) (CI)	360 Basic Work Station 140 Expanded Work Stations 500 Image Work Stations	Hardware Development
	IWS Hardware Sparing	N/A	Hardware Sparing Plan	Hardware Development
	Software Development	138 138 142 142 145 145 150 150	WAPPLS Programmers Manual WSYSTEM Programmers Manual WAPPLS Part 2 Spec WSYSTEM Part 2 Spec WAPPLS Data Dictionary WSYSTEM Data Dictionary WAPPLS CPCI WSYSTEM CPCI	Software Development
	Operations & Maintenance (WAPPLS, WSYSTEM, IWS)	131 131 N/A N/A N/A N/A	IWS Test Plans Tempest Test Plans IWS Test Procedures Tempest Test Procedures Problem Trouble Reports CCS Assessments	Integration Test & Transition

Figure IX.6-1. Subcontractors' Responsibilities

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IX.7      *Is the security organization and personnel dedicated to the  
NDP program?*

Answer:

Yes.  the D/C Segment Special Security Officer (SSO),      STAT  
and his staff including the alternate SSO, security specialists, and  
document custodians, are dedicated to the project.

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IX.8 *Please indicate the level and type of effort and schedule for support that you require of CSD and the SI.*

Answer:

Figure IX.8-1 illustrates the entire D/C Segment scheduled contract performance period and the estimated CSD and SI staffing requirement in manmonths to support  effort. The figure is divided into three parts: O&M Schedules, CSD Staffing Requirements, and SI Staffing Requirements.

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TASK	1982	1983	1984	1985	1986	1987	1988
	M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D
<b>O&amp;M SCHEDULES</b>							
1. PRE O&M							
2. BDC O&M							
3. IOC/FOC O&M							
4. FOC ACCTP TANCE O&M							
<b>CSD STAFFING:</b>							
A. O&M MANAGER							
B. S/W MANAGER							
C. H/W MANAGER							
D. OPERATIONS MANAGER							
E. LEAD SOFTWARE MAINTENANCE PROGRAMMERS							
F. HOST SOFTWARE MAINTENANCE PROGRAMMERS							
G. IWS SOFTWARE MAINTENANCE PROGRAMMERS							
H. HARDWARE MAINTENANCE SHIFTS SUPERVISORS (5 SHIFTS)							
I. HARDWARE MAINTENANCE							
J. DEPOT LIBRARIAN							
K. OPERATIONS (5 SHIFTS)							
* SHIFT SUPERVISOR							
* CONSOLE OPERATORS							
* ASSOCIATE OPERATOR							
* TAPE LIBRARIAN							
L. PERFORMANCE ANALYST							
M. SYSTEM LEVEL TRAINING							
N. SOFTWARE TRAINING							
O. DATA BASE TRAINING							
P. TEST AND TRANSITION TRAINING							
Q. OPERATOR TRAINING							
R. APPLICATIONS TRAINING							
S. DATA BASE ANALYST							
T. S/W ANALYST							
U. XEROX T&I ANALYSIS SUPPORT							
SI STAFFING							
W. PLAN/DOC/TRANS SUPPORT							

Figure IX.8-1. CSD and SI Support Requirements (Man Months)

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IX.9 *Please discuss in more detail the responsibilities of each of your subcontractors in the WBS 4.2, 4.10-12, 4.13-15, 4.16, 4.17 and 4.18 tasks and specifically relate this to the prime's level of activity and responsibilities in those areas. Please show how the subcontractor personnel fit into the project organization structure and clearly define reporting responsibilities.*

## Answer:

Under WBS 4.2 (Software Engineering), each subcontractor has responsibilities in each major system engineering area (4.2.1-8) in support of his CI/CPCI development activities. Each subcontractor provides input data to [ ] in support of virtually all segment-level system engineering specifications. [ ] retains ultimate responsibility and control in all areas, with primary segment-level responsibility for collecting and integrating subcontractor inputs in all but the following three areas:

- a. Operations Concept/Specification/Manuals
- b. Requirements Traceability
- c. Performance Modelling

Because of successful performance during the Design Competition Phase in these areas, two of our subcontractors have been given primary system engineering responsibility. [ ] will be providing the Operations focal point, and [ ] will be providing the requirements tracking focal point and performing the primary segment modelling activity. In these areas, [ ] provides input data, as do the other subcontractors. Note that even with this allocation of responsibility, the subcontractors' activities and products are still monitored and approved by [ ] prior to delivery to the Government.

In the case of WBS 4.10-12 (Test & Verification) [ ] will develop both the Segment Test Plan and the Segment Verification Plan. [ ] will then write the individual CPCI and CI test plan and procedures, perform

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tests, and generate test reports, all under the technical guidance of an [ ] independent test program monitor and review team.

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For WBS 4.13-15 (Installation, Checkout & Test) [ ] will prepare a D/C Segment input into the System Test/Demo Inputs. Based on guidance from the final document, [ ] will perform Installation Checkout & Test under the guidance of [ ] All contractors will support this activity for their area(s) of responsibility.

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The Development and Test Facility (WBS 4.16) consists of two facilities. The first is the Development and Test Lab (DTL) in [ ] facility. The second is the [ ] IWS development/integration facility located at the [ ] With the exception of the IWS work performed by [ ] all other work will use the [ ]

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In the case of WBS 4.17 (Training), the Training Plan will be developed by [ ] and approved by [ ] The training will then be conducted by [ ] with support from [ ] for the IWS training.

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O&M for the D/C Segment (WBS 4.18) will be managed by [ ] with support from each subcontractor for his area of responsibility.

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The reporting relationship for all subcontractors is through our Subcontract Acquisition Manager (for business management), with technical guidance provided by the appropriate area within the project organization. The response to Question IX.6 defines the technical interfaces for our subcontractors.

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IX.10      *Please address clearly any plans you may have subcontracting the conversion of existing code. Your consideration of this is noted in Appendix A5, but is not discussed in your Management Proposal.*

Answer:

Companies which are in the conversion business have field-seasoned automated tools which allow them to efficiently and accurately convert code. They provide functionally operational and warranted equivalent code. Our plan is to select a vendor shortly after initiation of the SAP contract for conversion of selected existing COBOL code to ☐ COBOL. We have already identified potential vendors who have strong conversion credentials: Rand Information Systems, Dataware, DASD, and WBG. Each of these vendors has demonstrated successful conversions of Univac COBOL to ☐ COBOL for large programs, similar in size and complexity to the D/C Segment. Their capabilities have been informally evaluated from a feasibility standpoint and include strengths in conversion techniques and tools, professional capabilities, management approach, cost, and degree of success (re-do work, etc.). We feel that this approach to recovering existing COBOL software offers the Government the most cost-effective development approach.

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PROJECT PLANS

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X.1 *Figure 5.1-2 shows the Development & Test Lab being decommissioned in March 1985; considering that the E/R and C/I Segments will be just coming on-line about then, how do you intend to support any development/ECP activities that may be required?*

Answer:

After March 1985, all planned factory development work will have been completed. The DTL will be shut down, and responsibility for configuration management, installation/checkout/test, and O&M will move to the site. This approach is consistent, and the most cost-effective, against the SAP SOW. Should EC's be required in 1985 which, by their magnitude, dictate the extension of the DTL, this would be included in a change proposal. Smaller ECs would be developed at the site on the Development, Test, and Training computer.

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X.2 *Please describe tools to be used to develop software for the UNIVAC system.*

Answer:

The [ ] development system will be used for source code data entry and edit as well as source library management for developing UNIVAC software.

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[ ] will be used. This provides the same stringent configuration management controls independent of the target processor.

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The UNIVAC processor will be used for compiles, link edits, and execution of UNIVAC software. Software development tools for the UNIVAC system include:

- a. UNIVAC 1100 Series Operating System - a system executive
- b. EDIT1100 - a full screen editor which provides source code syntax checking, concurrent editing of more than one source file, procedural language capabilities and a user interface directly through the Series 1100 System Control Software or through the Series 1100 Interactive Processing Facility
- c. Interactive Processing Facility (IPF1100) - a user interface providing a key work oriented procedural command language, interactive and batch processing support, distributed data processing, data management and session control
- d. Conversational Time Sharing (CTS) - a user interface providing data entry and editing, file manipulation, command subroutine capabilities, and program compiling and execution control

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- e. COBOL compiler and Cobol Syntax Preprocessor (BCOB) - COBOL processors
- f. Programmers Advanced Debugging System (PADS) - a debugging tool providing detection of user specified conditions, execution tracing and inspection/modification of program storage.

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X.3 *The Operation and Maintenance Plan presented is not clear on responsibilities for computer systems operations and management. Please provide a plan that provides for a contractor staffed operations and maintenance activity to support 24 hour per day, 7 day per week operation. This plan is to include software maintenance, hardware maintenance, data base maintenance and computer system operators.*

## Answer:

Computer Systems Operations and Management -- Our organizational/management structure is presented in Figure X.3-1. This structure provides the best means for establishing complete technical control at the least cost to the Government.

Our general overall O&M plan is for [ ] and [ ] to share O&M hardware/software maintenance support. On-site H/W maintenance support will be limited to the IWS. The [ ] equipment will be serviced by the [ ] Customer Engineers who are presently servicing [ ] equipment at the site and this maintenance team will be expanded as appropriate to the new [ ] equipment installed. [ ] and [ ] will each initially provide 50 percent of the personnel for S/W maintenance. Over the O&M period, [ ] participation will increase towards ultimately taking total responsibility.

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Figure X.3-2 presents the detailed [ ] staffing requirements for the entire O&M period while Figure X.3-3 presents the detailed CSD staffing requirement for the entire O&M period. As shown in the [ ] staffing requirements [ ] requires pre O&M [ ] operating support at our plant site for the final factory test prior to site shipment, and after site installation we require operations support for site testing, segment integration and system acceptance.

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Contractor Staffed O&M Activity -- A contractor staffed O&M plan, based on a 24 hour per day, 7 day per week operation, is depicted in Figure X.3-4.

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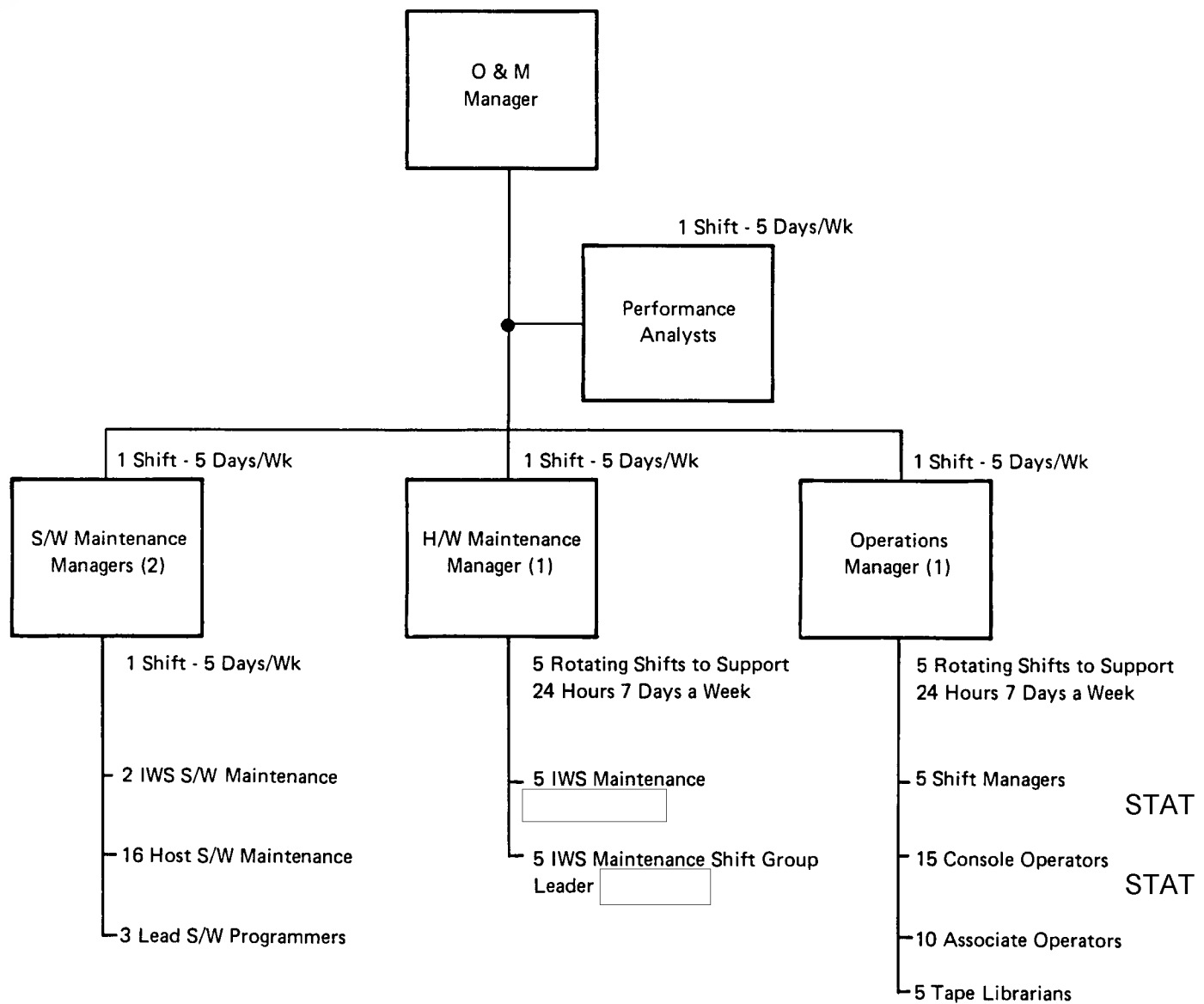


Figure X.3-1. O&M Organization

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Software Maintenance -- Software maintenance will be a 5 day (Monday through Friday) day shift operation. Programmers will be assigned on-call duty status (trouble shoot critical software problems that occur outside the Monday through Friday day shift operation) to cover the 24 hour per day, 7 day per week operation. When necessary, programmers will be given shift assignments.

Hardware Maintenance -- Hardware Maintenance will be a 24 hour per day, 7 days per week operation. Onsite hardware maintenance support will be limited to the IWS. The [ ] will be serviced by the [ ] Customer Engineers who are presently servicing [ ] equipment at the site and this maintenance team will be expanded as appropriate as the new [ ] Equipment is installed. For each shift of operation, [ ] will each require 1 IWS H/W maintenance person. Depot control will be handled by one maintenance librarian.

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Operations -- Operations will be a 24 hour per day, 7 days per week operation. Each working shift requires 1 Shift Manager, 3 Console Operators, 2 Associate Operators (Tape Mounters, Ribbon Changers, Paper Changers, etc.) and 1 Tape Librarian.

Performance Measurements -- This function will require 1 senior Systems Engineer. In order to maintain the broad spectrum necessary to evaluate true system performance the Performance Analyst will report directly to the O&M Manager in a staff capacity. The Analyst will work 5 days a week during the day shift. Figure X.3-4 illustrates the period of performance associated with this function.

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X.4 *Show in your schedule where the time is allocated to train government instructors and subsequently 400 users?*

Answer:

Training periods were allocated for the segment capabilities as follows:

- a. BOC -- 3 months
- b. IOC -- 4 months
- c. FOC -- 2 months.

For each of these periods, approximately the first quarter is devoted to training the Government instructors. This would then be followed by concurrent user training classes over the remaining training period. We believe that with our automated training techniques, and with the experience base of the personnel to be trained, this schedule allocation is appropriate. As the SAP effort proceeds and the operational concept is finalized, the Training Program will be refined to ensure that the schedule allocation is correct.

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X.5      *Please discuss and provide a sample output from the software development tools that will be used to develop Part I and Part II specifications. Any user manuals on these systems will be adequate.*

Answer:

Several documents describing the software development tools were delivered to NPIC at the March 18 Question and Answer Meeting. Included with this delivery is the Standard Terminal Interface (STI) document which is a productivity improvement tool for [ ] programmers. The STI provides a simple method of invoking automated tools, including document preparation. Also included is a General Information document on [ ] Structured Programming Facility (SPF). The document includes a description of the SCRIPT/VS utility.

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X.6      *Who is responsible for the generation of system software  
that is resident in the work station?*

Answer:

has overall responsibility for generation of system software (WSYSTEM)      STAT  
that is resident in the work station. The vast majority of that  
software is off-the-shelf software with only a small percentage having  
to be developed. During integration of the work station at  WSYSTEM      STAT  
will be thoroughly acceptance tested to verify requirement compliance.

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X.7      *What tools are (will be) available to convert UNIVAC application software to run on  systems?*

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Answer:

Two sets of software are available to  for this effort:

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1.    Proprietary software written and used by companies exclusively in the conversion business, such as Rand Systems, WBG, DASD, and Dataware. This software will be used to perform the conversion from UNIVAC to  COBOL. Some of the companies named above will also lease their software under non-disclosure agreements.

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2.    Proprietary software available under lease via software development companies, such as:

a.     conversion package: 5785 JAG

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- b.    Those conversion programs identified in GSA's Federal Conversion Support Center (FCSC) memorandum: FCSC Conversion Products/Aids Survey, Report GSA/FCSC-81/004. The survey is based on responses to Commerce Business Daily notices and FCSC surveys of vendors and research. The survey includes a list of software conversion tools for transition from one computer type to another.

Our current plan is to purchase the conversion service from a qualified vendor. Early in the SAP, we will finalize our approach, with Government concurrence.

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X.8 *Please discuss more clearly your plan for the IWS development, integration and test.*

Answer:

The first part of this response addresses the IWS itself and its development, integration and test as a standalone unit. The second part, addresses the integration and test of the IWS within the D/C Segment.

Standalone IWS -- The following discussion will concentrate on the fully capable (analyst's) IWS because it requires the most effort.

The analyst's IWS is composed of two "off-the-shelf" hardware components - an AlphaNumeric (A/N) part and an Imagery part. The A/N part is a TEMPEST certified version of the [ ] B-20 A/N terminal.

The B-20 is produced by [ ] under an OEM agreement with [ ]

[ ] The B-20, as part of its manufacturing tests, undergoes more than 72 hours of environmental (burn-in) testing - all of that while executing test S/W. The B-20 is shipped from California to [ ] Pennsylvania, the site of the [ ]

[ ] There, the unit will be stripped of its commercial shell and will be modified to include a new enclosure, such that the modified unit will meet NACSEM 5100 (TEMPEST) requirements. The modification will include the addition of off-the-shelf circuit boards, to allow the B-20 to interface with both the narrow band and wide band channels of the LAN. Existing circuit boards will also be added which will allow the B-20 keyboards to control the imagery side of the analysts IWS and to allow Imagery data stored on the A/N disk to be transferred to the refresh memory of the Imagery display. These boards will be tested by F&SSG along with the cable connection between the A/N half and the Imagery half. All modifications will be Tempest certified.

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The modified unit will undergo factory tests to ensure the viability of the modifications. [ ] will accept the unit on the [ ] manufacturing floor and move it to a portion of the [ ] manufacturing facility which will be set aside for [ ] integration.

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The Imagery half of the analyst's IWS is a modified [ ] 5216 Tempest certified Graphics Display Unit. The modifications to the off-the-shelf A 5216 consist of merging the existing two memory controller boards into a single board and the existing two disc controller boards into a single board to reduce production costs. In addition, an appropriate data entry device (trackball, mouse or joystick) will be tempest certified.

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The [ ] factory is located in [ ] - a 45 minute auto ride from [ ] hardware will be factory accepted [ ] after undergoing more than 48 hours of burn-in testing, and will then be shipped to the [ ] floor space at the F&SSG plant in [ ] It will then be connected to the A/N half and tested to ensure both H/W and S/W compatability (approximately 4 hours of testing). The accepted unit will then be shipped directly to NPIC [ ] for Installation and Checkout testing. This discussion has been limited to production units. The following paragraphs will discuss development units.

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Non-tempest certified B-20's and off-the-shelf [ ] 5216's will be used to develop and test the IWS interface to the D/C, C/S and C/I segments. Because of the schedule, a LAN will not be available until January 1984 -- too late to start the development of D/C, C/S and C/I interface software. Thus, emulation S/W will be developed (after agreement an appropriate segment ICD's) which will allow the logical (data) interfaces of the IWS to be developed and tested. This emulation S/W will reside in the [ ] 4341 development computer. Via this method

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the software interfaces of the IWS can be developed and tested early.

IWS To System Integration -- When a LAN becomes available (with its associated Bus Interface Units), electrical compatability will be tested at the  facility. Prototype IWS's will be connected to the prototype LAN (which will also be connected to the 3705 FEP) to ensure electrical comparability and allow testing of the complete spectrum of D/C interfaces, physical as well as logical. Interface testing with the C/I Segment must await the availability of the C/I Segment and will be done on-site at

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X.9      *What is your proposal for providing "as built" documentation for converted software?*

Our plan is to modify all software Part II specifications to reflect the "as built" status of the corresponding CPCIs. After software conversion is completed and programs have been verified, we will modify both source language commentary and existing documentation to reflect the verified products. This will provide a complete and consistent set of documentation for all D/C Segment software.

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X.10 *Please describe how you envision adequate testing of software given that the SDF computers are not comparable to the site's complement.*

Answer:

The Development and Test Laboratory (DTL) computers which are not comparable with the site's complement are the UNIVAC 1181 instead of the 1184 and one  3081 instead of two.

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Our plan is to use a UNIVAC configuration which will allow us to complete all functional testing at our location. We recognize that in some performance areas, because our configuration is not identical to the on-line configuration, adjustments will be required in system loading to reflect the configuration we are using. We believe this is a reasonable plan and will evaluate use of the site configuration for further testing as part of our site integration and test plans.

The UNIVAC software will be developed on the  3081 processor and downloaded to the UNIVAC 1181 for unit and integration testing using test drivers and data reduction tools.

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The single  3081 in the DTL is capable of supporting the entire operational software in one processor for total functional testing. DTL testing will have some performance testing limitations, but the majority of time-critical requirements will be testable (e.g., Exploitation response time, P&A turnaround time). The 3081 switchover to the backup 3081 processor will be demonstrated using the single 3081 to operate as two independent processors utilizing the OS/MVS Job Partitioning capability.

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The UNIVAC configuration, along with the  3081 configuration, will be stress tested for performance using an  4341 test computer system which simulates terminal transactions for both the  and UNIVAC programs.

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X.11      *Please discuss the impacts of not meeting the scheduled date for SBR.*

Answer:

We have defined the SBR as a vital, early SAP meeting for reviewing and reaching agreement on a departure point for the development effort. We recognize that all requirements will not be finalized, but we feel it is important to reach a common understanding of status and subsequent direction.

The impact of not meeting the scheduled date for SBR would be to have the development effort proceed per our current understanding of requirements, requirement priorities, and requirement completeness. The rework potential would be increased for proceeding with the development effort in an area which may have unrecognized requirement uncertainty.

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PROGRAM CONTROL

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XI.1      *What hardware is intended to be installed at [ ] that  
would require both [ ] customer engineers and an [ ] team of  
hardware maintenance personnel (III-4-25)?*

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Answer:

Within the D/C Segment [ ] host hardware will be installed at [ ]  
[ ] only. Therefore, [ ] Customer Engineers will only be required  
to provide maintenance services at that location. [ ] however,  
will maintain a staff of technicians at [ ] to perform maintenance  
and minimal field repair on installed Integrated Work Stations.

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PERSONNEL



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XII.2 *Please describe the rationale for staffing levels and skills mix throughout SAP.*

Answer:

The staffing levels and skills mix for the SAP were developed through a bottoms-up estimating process for each WBS element at Level 6. Detailed cost substantiation discussions for each WBS Level 3 item are contained in the Volume IV Cost Proposal, Appendix C1. These discussions address both staffing levels and phasing for each labor element of cost, including the basis for each estimate (e.g., development algorithm, similar work scope experience, etc.). At a summary level, the rationale for individual elements within each major WBS area is as follows:

- a. Program Management - These elements were sized based upon our experience on similar major programs within ☐ The elements within this area are sized and phased according to total manpower sizing and phasing requirements for all other WBS areas, and by the documentation requirements of the contract. STAT
- b. System Engineering - These elements were sized based upon our experience on similar major programs for each system engineering discipline. Primary system engineering function staffing levels (e.g., Part I Specification development) are driven by the magnitude of the software development effort.
- c. Software Development - These elements were sized according to two distinct methods. The primary software development activities of design, code, unit test, and problem evaluation/correction were sized using algorithms which were derived from our division's historical data base of development productivities. These algorithms (Vol. IV, Appendix C1) estimate staffing requirements against source lines of code to be developed,

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code complexity, code type, and the like. Development support functions such as software control and software management were sized based upon our experience in large software development efforts.

- d. Hardware Development - These elements were sized based upon our experience in the assembly, integration, and testing of similar hardware products.
- e. Test and Verification - These elements were sized in a manner similar to the Software Development budgeting methodology. Primary testing budgets were estimated using the algorithms reflected in Volume IV, Appendix C1. Support functions were sized based upon our testing experience on other major programs.
- f. Installation, Checkout and Test - These elements were sized using the same methodology defined for Item e. above.
- g. Development and Test Facility - These labor elements were sized based upon our extensive experience in operating development laboratories for major programs.
- h. Training - These elements were sized based upon our experience in developing and conducting training programs for similar systems.
- i. Operations and Maintenance - These elements were estimated using the two basic methodologies described for software development and test (see Appendix C). It should be noted that an additional assumption was made that the Government would provide maintenance personnel. This assumption is discussed in Volume IV, Section 5, Cost Assumptions.

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*XII.3 Please describe your performance in achieving projected staffing on other projects. Provide actual and projected curves as a function of time for the SDPC, DSM, and the three CAMS upgrades.*

Answer:

Figure XII.3-1 depicts the planned versus actual staffing for SDPC, DSM, and CAMS. The Shuttle Data Processing Complex contract is comprised of both onboard and ground processing software. The ground processing contract was awarded in 1974, and the staffing was largely accomplished through the phase-down of the Apollo program with over 90 percent of the staffing achieved through transfers from the Apollo program. The onboard processing contract, whose staffing is shown in the figure, was transferred to Houston from [ ] in 1973 with a cadre of approximately 40 people. The staffing was achieved through the phase down of [ ] activity with the FAA program, transfers from the Apollo program, and the college hire program.

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The DSM contract was awarded in December 1980. The plan staffing line is the original contract as amended by engineering change activity and added scope since contract inception. The actual staffing shown is through March 1982.

The CAMS contract began in October 1977. The delays in staffing to some extent resulted from individuals awaiting clearance and not being applied to the contract. The phase-down in staffing was mutually agreeable between [ ] and the Government after the Government had selected contractors for both CAMS2 development and CAMS1 maintenance.

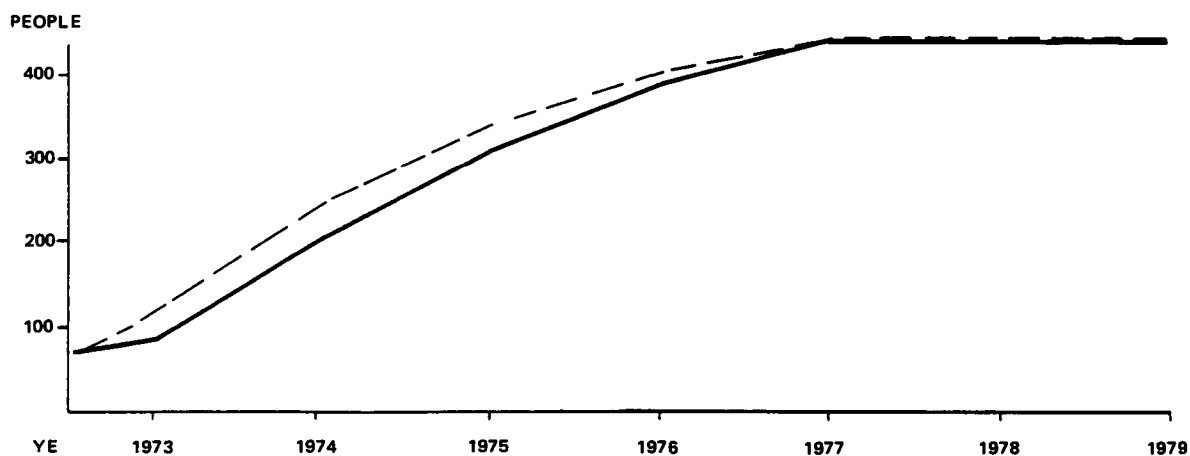
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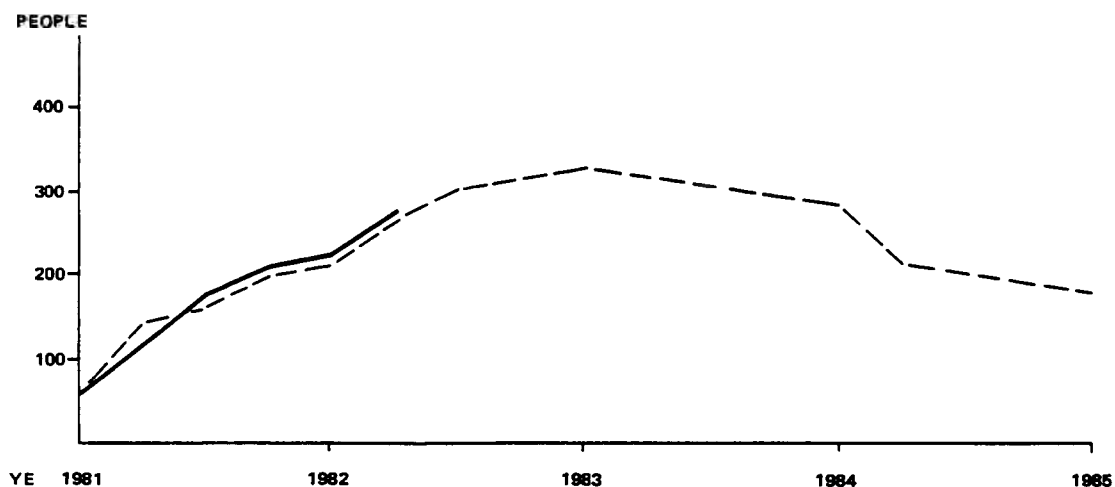
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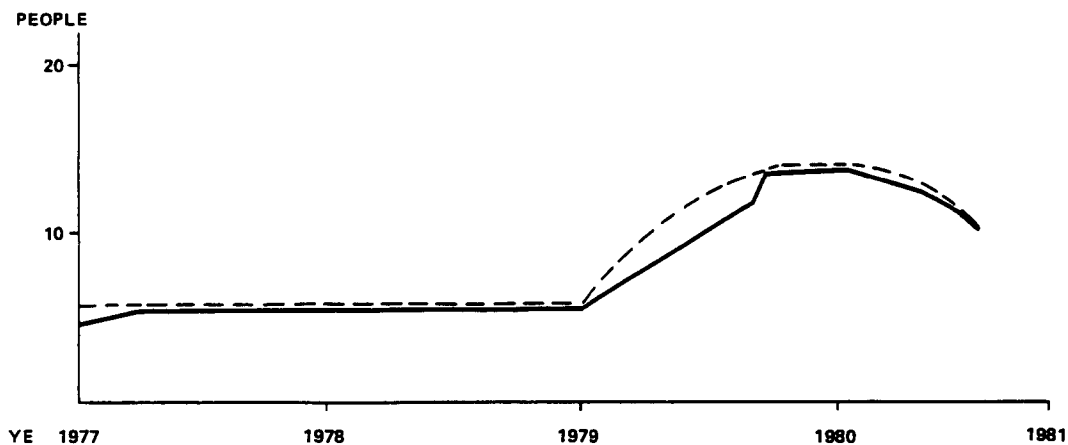
## SPDC (ON BOARD SOFTWARE CONTRACT)



## DSM



## CAMS



--- Planned  
— Actual

Figure XII.3-1. Actual Versus Planned Staffing for SPDC, DSM and CAMS

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XII.4 *Your staffing needs at peak and the identification of people to fill these needs by skill do not track very well--please clarify.*

Answer:

The peak staffing requirement for each major discipline is defined in Section 6.2 as:

<u>Discipline</u>	<u>Peak</u>
Program Management	59
System Engineering	56
Development	209
Support	76

The lists of individuals in Figures 6.2-2 through 6.2-5 of Section 6.2 yield the following numbers of identified personnel:

<u>Discipline</u>	<u>Identified</u>
Program Management	65
System Engineering	56
Development	193
Support	72

The only shortfalls in numbers are in the Development and Support disciplines. These areas peak well after the System Engineering peak. Our typical development philosophy has been to migrate systems engineering personnel to these other disciplines to feed them with vital knowledge after the peak systems engineering period. This approach has proven successful in improving development efficiency. We plan on satisfying SAP peak staffing needs by employing this approach.

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XIII.5 Please describe the rationale for the selection of key people.  
 e.g., [redacted]  
 designated key people?

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Answer:

Our selection rationale for key people is first to identify and define positions. Then qualified people are selected for those positions. A detailed task analysis of our D/C Segment organization identified a set of management and technical positions critical to the D/C Segment effort. These positions are defined as key because the associated responsibilities and prerequisite skills are vital to successful performance. Personnel selected to staff these positions are designated key personnel. Key personnel have the required skills and experience, including D/C Segment experience when applicable, and are committed to the project for the life of the contract.

[redacted] software development task  
 leaders and as such have important assignments, but those positions were not defined as key. [redacted] developed software, however, is the responsibility of the [redacted]  
 who is designated a key person.

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D [redacted] Business Manager for [redacted] D/C Segment tasks, was erroneously omitted from the key personnel listed in Figure 6.1-1. Figure 6.2-2 correctly identifies him as a key individual.

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[redacted] has an important assignment during DCP of coordinating the preparation of our deliverable documents, but his assignment in Systems Engineering in the Acquisition Phase does not qualify as a key position.

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XII.6      *How will consultants be used in SAP?*

Answer:

During the Study Phase, we utilized the four consultants who added unique operational and technical talents to the [ ] team, particularly in the areas of requirements, operation concepts, intelligence community interfaces, and NDS intersegment interfaces. During the System Acquisition Phase, we anticipate more direct contact and information exchange by all team members with NPIC and the intelligence community to update the requirements baseline and develop new concepts. The four consultants will continue to be utilized in their area of expertise to broaden the depth of the [ ] team. They will participate in pre-design concept meetings, internal design reviews and NPIC conferences, as appropriate. They will also analyze critical problems, develop technical concepts, and review all requirements and operations concept documentation.

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[ ] is a former ORD employee and has participated as a consultant to the CI and ER Segments. He will be utilized in planning and review of our intersegment requirements and ICDs. He will also serve as a technology consultant in the areas of image processing and information processing.

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[ ] has had extensive experience in Imagery analysis at the Air Force, COMIREX, and NPIC. He will be primarily utilized as a consultant in NPIC operation with emphasis on IEG activities and Broad Area Search operational concepts.

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[ ] has had extensive experience in real time reconnaissance and exploitation systems, with expertise in precision photo exploitation, lithographic and micrographic facilities and imagery interpretation. He will focus on the [ ] team's concepts for soft copy and hard copy exploitation.

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operational experience includes heading a team at DIA where he was project director for a special task force convened to improve reporting and information flow to national agencies and command authorities. The "Topic Reporting Concept" developed has been adopted by the intelligence community as the fourth component of the Imagery Intelligence Requirements Cycle. John will concentrate on topical reporting and integration of IP/EP/EPS concpets for the  team.

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XII.7 *Please provide more detail on the process of performance appraisal, evaluation, reviews, and promotions (i.e., who writes performance appraisals of project personnel, and how will responsibility for SW development personnel be shared between* [redacted]

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Answer:

Our performance planning, counselling, and evaluation process is administered by the card-holding manager. Where an employee is taking his day-to-day direction from other than his card-holding manager, the performance planning and evaluation process becomes a joint effort between the card-holding manager and the day-to-day manager. For our proposed organization, all development organizations report in a card-holding relationship to [redacted] with the exception of [redacted] the software development manager. Jim's card-holding manager is [redacted] Functional Software Manager.

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Jim holds the cards of all project software development personnel.

[redacted] will meet with [redacted] to prepare Jim's performance plan, to periodically assess and convey to Jim his performance, and to prepare Jim's appraisal. Terry is a member of the Project Technical Advisory Council and will be actively involved with the program on a continuous basis. Additionally, Terry and Walt will periodically review and discuss the performance and recommended promotions for all software development personnel.

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*XII.8 Provide a summary of staffing and clearance status separately for prime and each subcontractor by FY. Further breakdown by BOC, IOC, and FOC within each company and by skill and level within BOC, IOC, and FOC.*

Answer:

Figure XII.8-1 provides a summary of staffing and clearance status for  STAT and each of the subcontractors. The staffing line depicts the number of people in terms of average work load on the program for the fiscal year. Clearance status is shown by three numbers. The number above the line reflects the clearances in process, both in-house and with the Government. The number outside the parenthesis below the line reflects those people who have been briefed or are approved for briefing. The number inside the parenthesis reflects additional people in process who have current SCI clearances and can be more easily cleared.

The number of cleared people is greater than the staffing requirement because of attrition, the need for part time staffing, and support personnel who provide management, consultation or administrative support to the project, but are not assigned.

Figures XII.8-2 through XI.8-5 depict the level allocation by skill at peak staffing, within each discipline by contractor.


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		A	B	C	D
Program Management		13	5	8	13
System Engineering		16	4		
SW Development	BOC	32	2	30	
SW Development	IOC	18	1	14	
SW Development	FOC	4		2	
Hardware Development	BOC	2			
Hardware Development	IOC	1			
Hardware Development	FOC	0.8			
Test and Verification	BOC	1			
Test and Verification	IOC	1.5			
Test and Verification	FOC	1			
I C & T	BOC	0.3			
I C & T	IOC	0.4			
I C & T	FOC	0.3			
Dev and Test	(FAC)	11	1	6	
Training		-	-	-	
O & M		4	2		

Figure XII.8-2.  Skill/Level Allocation.

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		A	B	C	D
Program Management		5	1		1
System Engineering		6	2		
SW Development	BOC	9	7		1
SW Development	IOC	6	4		1
SW Development	FOC	2	1		
Hardware Development	BOC				
Hardware Development	IOC				
Hardware Development	FOC				
Test and Verification	BOC	9	8		1
Test and Verification	IOC	10	8		1
Test and Verification	FOC	1	1		
I C & T	BOC	4	4		1
I C & T	IOC	4	4		
I C & T	FOC				
Dev and Test	(FAC)		1		1
Training		2	3		
O & M			2		1

Figure XII.8-3. Skill/Level Allocation.

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		A	B	C	D
Program Management		2			
System Engineering		4	5	2	
SW Development	BOC	6	17	17	
SW Development	IOC				
SW Development	FOC				
Hardware Development	BOC				
Hardware Development	IOC				
Hardware Development	FOC				
Test and Verification	BOC				
Test and Verification	IOC				
Test and Verification	FOC				
I C & T	BOC				
I C & T	IOC				
I C & T	FOC				
Dev and Test	(FAC)				
Training		1		1	
O & M					

Figure XII.8-4. Skill/Level Allocation.

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		A	B	C	D
Program Management		2	2		1
System Engineering		4	2	1	
SW Development	BOC	7	3		
SW Development	IOC	18	2		1
SW Development	FOC	-	-		-
Hardware Development	BOC	1			
Hardware Development	IOC	1			
Hardware Development	FOC	0.2			
Test and Verification	BOC	6			
Test and Verification	IOC	11	2		1
Test and Verification	FOC	2	2		
I C & T	BOC	2			
I C & T	IOC	2			
I C & T	FOC	-			
Dev and Test	(FAC)	-			
Training		2			
O & M		2	2		

Figure XII.8-5.  Skill/Level Allocation.

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XII.9 Please clarify [ ] primary responsibility.

STAT

Answer:

[ ] employee, has been shown in our proposal as responsible for IWS Hardware Development and Acquisition. As such, Dave's primary responsibility will be to ensure that the H/W being developed and acquired by [ ] meets the D/C Segment performance requirements. As we are proposing modified off-the-shelf hardware, Dave will be responsible for ensuring that the design, development and testing of the modifications proceed in an orderly and timely fashion and that the resultant hardware meets requirements.

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He will be responsible for supporting the System Engineering function in setting requirements for the modifications and in overseeing [ ] and aiding in their design of new/modified circuit boards. He will also be responsible for acceptance testing of the modified hardware.

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His role is principally technical in nature. He will be supported by a Subcontract Acquisition Manager monitor responsible for the business aspects of [ ] relationship with these subcontractors.

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XII.10 Please provide division level hiring/personnel acquisition plans by skill over the next five years.

Answer:

hiring/personnel acquisition plans by year are: STAT

	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>
System & Development Engineers	238	172	129	204	182
Software Engineers & Programmers	302	218	163	259	230
Non-Exempt Personnel	370	141	224	274	224

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XII.12 Will  be 100% committed to D/C Segment?

STAT

Answer:

will be 100% committed to the NDS Program. The degree of his commitment to the D/C Segment is dependent upon  success in pursuit of the C/S Segment. If SDC is successful in the competition for the C/S Segment Dick's time will be split between supporting the D/C Segment and supporting the C/S Segment. If SDC is unsuccessful in its pursuit of the C/S Segment, Dick will be available to support the D/C Segment 100%.

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XII.13 [redacted], are listed in both the development staffing and support staffing tables -- please clarify and address their not being available until 1/83?

STAT

Answer:

[redacted] should not have been listed in the support staffing tables. Both of them will be on the development staff and will be on the project at contract award.

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XII.14 [ ] is listed as being a key person for [ ] (no resume)  
and also listed as a key person for [ ] (pages III-6-3 and  
III-6-7). Please clarify.

STAT  
STAT

Answer:

[ ] is not a key person and page III-6-9  
should not have indicated key person. Pages III-6-3 and III-6-7 refer to  
[ ] employed by [ ] who is a key person.

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XII.15 Please elaborate on [ ] S/W development and management related experience.

STAT

Answer:

In addition to [ ] experience listed in his resume, he has specific management and S/W development experience as follows:

STAT

- a. Participation in [ ] SATELLITE DATA HANDLING SYSTEM proposal where he led the S/W design team,
- b. Managing the S/W design effort on [ ] Metrological Data Utilization Center contract with the Government of India,
- c. Managing an effort for the Air Force Global Weather Control which resulted in development of formal S/W Project Management Procedures.

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XII.16 *Please discuss current assignments, commitments to future assignments, and availability in the time frames required of personnel named in the proposal.*

Answer:

Figure XII.16-1 presents current and future personnel assignments and availability for each person named in our proposal. Current assignment data demonstrates that a large number of personnel are assigned now to D/C Segment and that others are coming to D/C Segment from projects with technical requirements and tasks that are similar to NPIC. Commitments to future assignments are all to the D/C Segment project. We have shown future assignments up to the 4th quarter of FY 1983 when the D/C Segment project reaches peak staffing. Availability is defined as the percent of the individual's work time to be devoted to the D/C Segment project upon assignment. Most persons are 100% available to D/C Segment. Some support and administrative personnel are time shared with other projects to contain costs and increase efficiency and productivity. The data is presented by company. Skill areas are defined on page III-6-4 of our Management Proposal of February 24, 1982. Individuals' levels are defined on page III-6-5 of the Management Proposal.

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	PM	D	Classified	Tech Pubs	D/C Segment	Tech Pubs	Editorial Assistant	5/82	50
	PM	C	Classified	Tech Pubs	D/C Segment	Tech Pubs	Artist	5/82	50
	PM	A	SACDIN	Project Control	D/C Segment	Project Control	Cost Control	5/82	100
	PM	C	Finance	CSS Pricing	D/C Segment	Finance	Cost Analysis	5/82	100
	PM	C	Reprographics	Tech Pubs	D/C Segment	Security	Security	5/82	100
	PM	D	Mgmt Svcs	Admin	D/C Segment	Admin	Admin Support	5/82	100
	PM	B	Finance	Financial Control	D/C Segment	Financial Control	Cost Analysis Manager	5/82	50
	PM	B	GPS	Product Assurance	D/C Segment	Quality Assurance	Quality	5/82	50
	PM	D	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Repro Operator	5/82	50
	PM	B	Classified Project	Product Assurance	D/C Segment	Quality Assurance	Quality	5/82	50
	PM	A	D/C Segment	Project Control	D/C Segment	Project Control	Subcontractor Control	5/82	100

Figure XII.16-1. Personnel Assignments

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	PM	A	Classified Project	Security	D/C Segment	Security	Manager CSSO	5/82	100
	PM	D	Classified Projects	Admin	D/C Segment	Admin	Admin Support	5/82	25
	PM	D	Classified Projects	Tech Pubs	D/C Segment	Tech Pubs	Text Processor	5/82	100
	PM	C	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Artist	5/82	25
	PM	A	Classified Projects	Product Assurance	D/C Segment	Quality Assurance	Quality Assurance Manager	5/82	50
	PM	D	Classified Projects	Admin	D/C Segment	Admin	Admin Support	5/82	25
	PM	A	D/C Segment	Project Mgmt	D/C Segment	Project Mgmt	Deputy Proj Mgr	5/82	100
	PM	A	D/C Segment	Project Control	D/C Segment	Project Control	Performance Analysis	5/82	100
	PM	A	D/C Segment	Project Control	D/C Segment	Project Control	Cost & Schedule Control	5/82	100
	PM	D	Mgmt Svcs	Admin	D/S Segment	Admin	Admin Support	5/82	100
	PM	A	D/C Segment	Project Mgmt	D/C Segment	Project Mgmt	Project Manager	5/82	100
	PM	D	Classified Projects	Admin	D/C Segment	Admin	Admin Support	5/82	100

Figure XII.16-1. Personnel Assignments (Continued)

## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	PM	A	FSD HQ	Plans & Controls	D/C Segment	Subcontract Acquisition Mgmt	<input type="checkbox"/> Subcontract Monitor	5/82	100
	PM	C	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Artist	5/82	50
	PM	A	D/C Segment	Project Control	D/C Segment	Project Control	Schedule Control	5/82	100
	PM	D	Classified Projects	Security	D/C Segment	Security	Document Control	5/82	100
	PM	D	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Cadam Operator	5/82	75
	PM	B	Classified Projects	Security	D/C Segment	Security	Alt. CSSO	5/82	100
	PM	B	D/C Segment	Project Control	D/C Segment	Project Control	Configuration Mgmt	5/82	100
	PM	A	Mgmt Svcs	Contracts	D/C Segment	Contracts	D/C Seg Contract	5/82	100
	PM	A	D/C Segment	Project Control	D/C Segment	Project Control	Configuration Mgmt	5/82	100
	PM	A	Engineering S/W & Technology	S/W Engrg Performance	D/C Segment	Subcontract Acquisition Mgmt	<input type="checkbox"/> Subcontract Monitor	5/82	100
	PM	A	D/C Segment	Project Control	D/C Segment	Project Control	Project Control Manager	5/82	100

Figure XII.16-1. ☐ Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	PM	D	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Repro Operator	5/82	25
	PM	D	Mgmt Svcs	Admin	D/C Segment	Admin	Admin Support	5/82	100
	PM	A	NATO Design	System Design	D/C Segment	Subcontract Acquisition Mgmt	SDC Subcontract Monitor	5/82	100
	PM	D	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Cadam Operator	5/82	50
	PM	D	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Script Typist	5/82	100
	PM	D	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Repro Operator	5/82	25
	PM	A	Space Telescope	Project Manager	D/C Segment	Subcontract Acquisition Mgmt	Subcontract Acquisition Mgr	5/82	100
	PM	D	Classified Projects	Tech Pubs	D/C Segment	Tech Pubs	Script Typist	5/82	100
	PM	C	Finance	Financial Mgmt Svcs	D/C Segment	Finance	Cost Analysis	5/82	100
	PM	D	Classified Projects	Security	D/C Segment	Security	Security	5/82	100
	PM	D	Mgmt Svcs	Admin	D/C Segment	Security	Security	5/82	100

Figure XII.16-1. Personnel Assignments (Continued)

## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	PM	C	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Artist	5/82	25
	PM	C	D/C Segment	Project Control	D/C Segment	Project Control	Data Management	5/82	100
	PM	D	D/C Segment	Project Control	D/C Segment	Project Control	CM Librarian	5/82	100
	PM	D	Mgmt Svcs	Admin	D/C Segment	Admin	Admin Support	5/82	100
	PM	D	Mgmt Svcs	Tech Pubs	D/C Segment	Tech Pubs	Composer Operator	5/82	50
	PM	B	Classified Projects	Tech Pubs	D/C Segment	Tech Pubs	Tech Pubs Manager	5/82	50
	PM	D	D/C Segment	Security	D/C Segment	Security	Security	5/82	100

Figure XII.16-1. Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS -- CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Req Anal	Perf Anal	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Operations	Operations Manger	5/82	100
	Sys Eng	B	New Hire	Sys Eng	D/C Segment	Design	Sys Eng	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Design	Des. Mgr.	5/82	100
	Sys Eng	B	D/C Segment	Sys Eng	D/C Segment	Design	Sys Eng	5/82	100
	Sys Eng	B	DLDED	Engineer	D/C Segment	Design	Sys Eng	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Comm Intf	Sys Eng	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Req Anal	Sys Eng	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Sys Eng	Sys Eng	5/82	100
	Sys Eng	A	DLDED	Engineer	D/C Segment	Design	Sys Eng	6/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Sys Eng	Sys Eng Manager	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Sys Eng	Sys Eng	5/82	100
	Sys Eng	A	D/C Segment	Proj Mgmt	D/C Segment	Req Anal	Req Anal Manager	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Design	Sys Eng	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	SE	Sys Eng	5/82	100
	Sys Eng	A	Adv Sys	Sys Eng	D/C Segment	Design	Sys Eng	5/82	100
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Comm/Intf	Sys Eng	5/82	100

Figure XII.16-1. Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Sys Eng	A	D/C Segment	Sys Eng	D/C Segment	Comm/Intf	Comm Intf Manager	5/82	100
	Sys Eng	B	D/C Segment	Sys Eng	D/C Segment	Design	Sys Eng	5/82	100
	Sys Eng	A	SACDIN	Sys Eng	D/C Segment	Design	Sys Eng	5/82	100

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Figure XII.16-1. Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev	A	GPS	SW Dev	D/C Segment	SW Engr	SW Architecture	5/82	100
	Dev	A			D/C Segment			3/83	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	C	Common System	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	B	TSO Test	SW Dev	D/C Segment	CPCI Dev	SW Dev	6/82	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	CPCI Dev	SW Design	5/82	100
	Dev	A	CIA Applications	SW Dev	D/C Segment	CPCI Dev	SW Dev	10/82	100
	Dev	A	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	A	CIA-Doric	SW Dev	D/C Segment	SW Engr	SW Design Control	10/82	100
	Dev	A	IR <sup>2</sup>	SW Dev	D/C Segment	CPCI Dev	SW Dev-DB	11/82	100
	Dev	C	Space Telescope	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	CPCI Dev	SW Design	5/82	100
	Dev	C	Common Systems	SW Dev	D/C Segment	CPCI Dev	SW Dev	2/83	100
	Dev	C	FAA	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	A	NFM Spt	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	C	Series 1	SW Dev	D/C Segment	CPCI Dev	SW Dev	2/83	100

Figure XII. 16-1. Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev	C	Tools/ Techniques	SW Dev	D/C Segment	CPCI Dev	SW Dev	3/83	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	SW Engr	DB Design	5/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	A	ZIRPEL	SW Dev	D/C Segment	CPCI Dev	SW Dev	7/82	100
	Dev	C	PCTC	SW Dev	D/C Segment	CPCI Dev	SW Dev	9/82	100
	Dev	C	Common System	SW Dev	D/C Segment	CPCI Dev	SW Dev	3/83	100
	Dev	C	Common System	SW Dev	D/C Segment	CPCI Dev	SW Dev	6/82	100
	Dev	B	CIA-Doric		D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	CPCI Dev	CPCI Dev Manager	5/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	B	D/C Segment	SW Dev	D/C Segment	CPCI Dev	SW Design- DB	5/82	100
	Dev	A	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	2/83	100
	Dev	A	D/C Segment	Segment Design	D/C Segment	Dev	Dev Manager	5/82	100
	Dev	B	D/C Segment	Design	D/C Segment	HW Dev	IWS H/W Design	5/82	100
	Dev	A	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	PCTC	Project Manager	D/C Segment	SW Engr	DB Admin Mgmt	10/82	100

Figure XII.16-1.

Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev	B	D/C Segment	SW Dev	D/C Segment	SW Engr	DB Conv	5/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	2/83	100
	Dev	C	Cobra Judy	Wayload Operations	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	CIA-Doric	SW Dev	D/C Segment	SW Engr	DB Admin	10/82	100
	Dev	A	3705 Spt	SW Dev	D/C Segment	SW Ctrls	SW Cntrls	5/82	100
	Dev	B	Common System	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	B	CIA-Doric	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	SW Dev	SW Dev Manager	5/82	100
	Dev	B	D/C Segment	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	FAA	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	C	BTE Dev	SW Dev	D/C Segment	CPCI Dev	SW Dev	2/83	100
	Dev	A	FAA	SW Dev	D/C Segment	CPCI Dev	SW Dev	2/83	100
	Dev	C	Common System	SW Dev	D/C Segment	CPCI Dev	SW Dev	12/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	SW Engr	DB Design	5/82	100
	Dev	C	SACDIN Dev	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	C	Cobra Judy	Wayload Operations	D/C Segment	CPCI Dev	SW Dev	3/83	100

Figure XII. 16-1.

Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev	A	D/C Segment	SW Dev	D/C Segment	SW Engr	SW Architecture	5/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	C	FAA	SW Dev	D/C Segment	CPCI Dev	SW Dev	7/82	100
	Dev	B	PCTC	SW Dev	D/C Segment	CPCI Dev	SW Design	9/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	GPS	SW Dev	D/C Segment	SW Ctrls	SW Cntrl	9/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	SW Ctrls	SW Cntrl	5/82	100
	Dev	C	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	3/82	100
	Dev	C	Common System	SW Dev	D/C Segment	CPCI Dev	SW Dev	1/83	100
	Dev	A	CIA-Appl	SW Dev	D/C Segment	SW Engr	SW Design Control	10/82	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	SW Engr	SW Design	5/82	100
	Dev	C	Space Telescope	SW Dev	D/C Segment	CPCI Dev	SW Dev	2/83	100
	Dev	A	D/C Segment	SW Dev	D/C Segment	SW Engr	SW Engr Manager	5/82	100
	Dev	C	NFM	SW Dev	D/C Segment	CPCI Dev	SW Dev	12/82	100
	Dev	A	D/C Segment	HW Dev	D/C Segment	HW Eng	HW Eng Manager	5/82	100

Figure XII. 16-1.

Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev	C	NFM	SW Dev	D/C Segment	CPCI Dev	SW Dev	12/82	100
	Dev	A	Leave of Absence	SW Dev	D/C Segment	SW Ctrl	SW Cntrl Manager	5/82	100
	Dev	C	D/C Segment	SW Dev	D/C Segment	SW Engr	DB Conv	5/82	100
	Dev	A	ZIRPEL	SW Dev	D/C Segment	SW Engr	SW Design Control	5/82	100
	Dev	A	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	12/82	100
	Dev	C	D/C Segment	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100
	Dev	A	GPS	SW Dev	D/C Segment	CPCI Dev	SW Dev	5/82	100

Figure XII. 16-1. Personnel Assignments (Continued)

## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Sup	A	D/C Segment	IT & T	D/C Segment	IT & T	Manager	5/82	100
	Sup	B	D/C Segment	SE	D/C Segment	Training	Training Manager	5/82	100
	Sup	A	FAA	ILS	D/C Segment	Training	Instructor	11/83	75
	Sup	B	D/C Segment	IT & T	D/C Segment	Trans Plan	Trans Plng Mgr	5/82	100
	Sup	A	SDA	Engr	D/C Segment	Trans Plan	Test Planner	5/82	100
	Sup	A	D/C Segment	Test	D/C Segment	I & T	I & T	5/82	100
	Sup	A	SACDIN	Test	D/C Segment	I & T	TE5 Engr	5/82	100
	Sup	A	DSM	ILS	D/C Segment	O & M	O & M Mgr	5/82	50
	Sup	A	LPSU	ILS	D/C Segment	O & M	ILS Analyst	5/82	25
	Sup	B	LPSU	ILS	D/C Segment	O & M	ILS Analyst	7/82	25
	Sup	B	SACDIN	ILS	D/C Segment	O & M	ILS Analyst	2/83	25

Figure XII. 16-1. Personnel Assignments (Continued)

## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	PM	A	Staff	QA	D/C Seg	QA	SW QA	05/82	100
	PM N	A	NSA Class	Proj Cont	D/C Seg	Proj Ctrl	Cost Ctrl	05/82	100
	PM	A	D/C Seg	DP Proj Mgr	D/C Seg	Proj Mgt	Dep Proj Manager	05/82	100
	PM C	A	CIA Class	Proj Mgmt	D/C Seg	Data Mgt	CM, Doc	05/82	100
	PM C	D	CIA Class	Admin	D/C Seg	Admin	Admin Support	05/82	100
	PM	A	D/C Seg	Proj Mgr	D/C Seg	Proj Mgt	Proj Mgr	05/82	100
	PM		Staff	Security	D/C Seg	Security	SSO	05/82	100
	PM	B	Staff	Admin	D/C Seg	Admin	Secretary	05/82	100

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Sup C	A	Class	Eng	D/C Seg	T + V	Test Eng	05/82	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	07/82	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	05/82	100
	Sup	A	D/C Seg	Sys Arch	D/C Seg	Trans	Planner	05/82	100
	Sup	B	D/C Seg	Transition	D/C Seg	I, C+T	Manager	05/82	100
	Sup	A	D/C Seg	Ops Concepts	D/C Seg	T + V	Test Plans	05/82	100
	Sup N	A	Class	Eng	D/C Seg	T + V	Test Eng	01/83	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	01/83	100
	Sup	B		Eng	D/C Seg	Training	Test Eng	01/84	100
	Sup	A		Eng	D/C Seg	Tranning	Mgr	05/82	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	03/83	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	01/83	100
	Sup	C	Staff	Planning	D/C Seg	Facilities	Planner	07/82	100
	Sup C	A	Class	Eng	D/C Seg	T + V	Test Eng	12/82	100
	Sup	B	DOE	Eng	D/C Seg	T + V	Test Eng	03/83	100
	Sup N	A	Class	Eng	D/C Seg	T + V	Test Eng	03/83	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	01/82	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	12/82	100
	Sup	B	NCS	Eng	D/C Seg	T + V	Test Eng	01/83	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	07/82	100
	Sup	C	Staff	Eng	D/C Seg	T + V	Test Eng	05/82	100

Figure XII.16-1.

Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Sup C	A	Class	Eng	D/C Seg	T + V	Test Eng	03/83	100
	Sup N	A	Class	Eng	D/C Seg	T + V	Test Eng	05/83	100
	Sup AF	A	Class	Eng	D/C Seg	T + V	Test Eng	05/83	100
	Sup	B	NSA Class	Training	D/C Seg	Training	Trainer	01/84	100
	Sup C	C	Class	Eng	D/C Seg	T + V	Test Eng	09/83	100
	Sup NAV	A	Class	Eng	D/C Seg	T + V	Test Eng	09/83	100
	Sup C	A	Class	Eng	D/C Seg	T + V	Test Eng	09/83	100
	Sup	A	FAA	T + V	D/C Seg	T + V	Mgr	05/82	100
	Sup C	B	Class	Eng	D/C Seg	Transition	Mgr	05/82	100
	Sup C	A	Class	Eng	D/C Seg	T + V	Test Eng	07/83	100
	Sup N	C	Class	Eng	D/C Seg	Facilities	Planner ;	09/82	100
	Sup N	B	Class	Eng	D/C Seg	T + V	Test Eng	09/82	100



## PERSONNEL ASSIGNMENTS — CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev N	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev N	A	Class	S/W Dev	D/C Seg	Univac SW	S/W Eng	12/82	100
	Dev C	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	A	USAF I&W	S/W Dev	D/C Seg	S/W Dev	S/W Eng	11/82	100
	Dev	A	Navelex	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev C	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	C	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	09/82	100
	Dev	A	D/C Seg	Sys Eng	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	C	D/C Seg	Pt I Spec	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev	B	D/C Seg	Pt I Spec	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	A	Navy	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev N	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev	B	USAF	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	A	D/C Seg	S/W Mgr	D/C Seg	S/W Mgr	S/W Eng	05/82	100
	Dev N	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev	A	D/C Seg	Pt I Spec	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev	B	D/C Seg	Pt I Spec	D/C Seg	S/W Dev	S/W Eng	05/82	100

Figure XII.16-1.

Personnel Assignments (Continued)

## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev	B	Staff	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	C	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	09/82	100
	Dev C	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	B	D/C Seg	Pt I Specs	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev	B	Staff	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	A	D/C Seg	Pt I Specs	D/C Seg	DB Design	S/W Eng	05/82	100
	Dev N	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	A	Class	S/W Dev	D/C Seg	Univac SW	S/W Eng	12/82	100
	Dev C	C	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	B	USAF I&W	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev N	C	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev C	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	12/82	100
	Dev N	C	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev N	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev N	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	06/83	100
	Dev C	A	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev	B	Staff	S/W Dev	D/C Seg	S/W Dev	S/W Eng	05/82	100
	Dev N	B	Class	S/W Dev	D/C Seg	S/W Dev	S/W Eng	12/82	100

Figure XII.16-1.

Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	SE N	A	Class	Sys Eng	D/C Seg	Sys Eng	CPCI Des	5/82	100
	SE N	A	Class	Sys Eng	D/C Seg	Sys Eng	CPCI Des	5/82	100
	SE N	A	Class	Sys Eng	D/C Seg	Sys Eng	CPCI Des	5/82	100
	SE N	A	Class	Sys Eng	D/C Seg	Sys Eng	CPCI Des	5/82	100
	SE N	A	Class	Sys Eng	D/C Seg	Sys Eng	CPCI Des	5/82	100
	SE N	B	Class	Sys Eng	D/C Seg	Sys Eng	CPCI Des	5/82	100
	SE C	B	Class	Sys Eng	D/C Seg	Sys Eng	CPCI Des	5/82	100
	SE	A	D/C Seg	SE Mgr	D/C Seg	Sys Eng	Sys Eng Manager	5/82	100

## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Pgm. Mgmt.	A	D/C Segment	Pgm. Mgmt.	D/C Segment	Pr. Met.	PM	5/82	100
	Pgm. Mgmt.	A	D/C Segment	Mgr. S.E.	D/C Segment	S.E.	DPM	5/82	100
	Pgm. Mgmt.	A	D/C Segment	Proj Cont	D/C Segment	Pr Cont	Manager	5/82	100
	Dev.	A	D/C Segment	SW Dev.	D/C Segment	SW Dev.	Manager	5/82	100
	Sys Eng	A	D/C Segment	SDA Sim.	D/C Segment	SE	SDA/SIM Manager	5/82	100
	Dev.	A	D/C Segment	SW Dev.	D/C Segment	SW Dev.	Team Ldr.	5/82	100
	Dev.	B	Corporate MIS	MIS	D/C Segment	SW Dev.	Team Ldr.	5/82	100
	Dev.	A	Classified	SW Dev.	D/C Segment	SW Dev.	Team Ldr.	5/82	100
	Dev.	A	Corporate MIS	MIS	D/C Segment	O & M	Team Ldr.	5/82	100
	Dev.	B	SMARTS	S.W.	D/C Segment	SW Dev.	Team Ldr.	5/82	100
	Dev.	A	D/C Segment	Team Ldr/ RTVM	D/C Segment	RTVM	Team Ldr.	5/82	100
	Dev.	B	TVA	S.E.	D/C Segment	RTVM	Team Ldr.	5/82	100
	Dev.	A	D/C Segment	S.E.	D/C Segment	S.E.	CPCI Eng.	5/82	100
	Dev.	C	Internal Proj Cntrl	SW Dev.	D/C Segment	RTVM	PSA/PSL	5/82	100

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Figure XII.16-1. Personnel Assignments

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Sys Eng	B	D/C Segment	S.E.	D/C Segment	S.E.	SDA/SIM Team Ldr.	5/82	100
	Sys Eng	B	D/C Segment	S.E.	D/C Segment	S.E.	SW Eng.	5/82	100
	PM	D	D/C Segment	Pgm Mgmt	D/C Segment	Pgm Mgmt	Admin.	5/82	100
	PM	D	Admin.	Pgm Mgmt	D/C Segment	SW Dev.	Admin.	5/82	100
	Dev.	C	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev	B	Corporate MIS	MIS	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	Corporate MIS	MIS	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	M.E.M.O.	S.E.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	Corporate MIS	MIS	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	SMARTS	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	SPRT	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100

Figure XII.16-1. Personnel Assignments (Continued)

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev.	C	SMARTS	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	DCP	C <sup>3</sup> I	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	SMARTS	S.E.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	DCP	C <sup>3</sup> I	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	A	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	DJCS	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	B	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	5/82	100
	PM	D	Admin.	SE	D/C Segment	S.E.	Admin.	7/82	100
	Dev.	C	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	B	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	B	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100

Figure XII.16-1. Personnel Assignments (Continued)

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105

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev.	C	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	CORP MIS	MIS	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	B	AMIP	C <sup>3</sup> I	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	R <sup>3</sup>	SW Dev.	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Dev.	C	DAMSEL	Data Analysis	D/C Segment	SW Dev.	SW Eng.	7/82	100
	Sys Eng	C	D/C Segment	S.E./SIM.	D/C Segment	S.E.	Systems Eng.	5/82	100
	Sys Eng	A	D/C Segment	S.E./Comm	D/C Segment	S.E.	Comm Eng	5/82	100
	Sys Eng	A	D/C Segment	S.E./Comm	D/C Segment	S.E.	Comm Team Ldr.	5/82	100
	Dev.	C	WAR H.Q.	Data Analysis	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	Stds. & Specs Pgms.	Reqs Anal	D/C Segment	SW Dev.	SW Eng.	5/82	100
	Dev.	C	Classified	SW Dev.	D/C Segment	SW Dev.	SW Eng.	5/82	100

Figure XII.16-1. Personnel Assignments (Continued)

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106

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Proj Mgr	A	Proposal Activity	S/W Dev	D/C Seg	Prod Assur	S/W QA	05/82	50
	Proj Mgr	A	Classified Program	Prod Assur	D/C Seg	Prod Assur	H/W QA	05/82	50
	Proj Mgr	A	D/C Seg	Proj Cont	D/C Seg	Proj Cont	Budget Analyst	05/82	100
	Proj Mgr	B	D/C Seg	Security	D/C Seg	Security	CSO	05/82	25
	Proj Mgr	D	D/C Seg	Admin Support	D/C Seg	Admin Support	Secretary	05/82	100
	Proj Mgr	D	Jintaccs	Admin Support	D/C Seg	Admin Support	Admin Assistant	05/82	100
	Proj Mgr	A	D/C Seg	Proj Mgt	D/C Seg	Proj Mgt	Proj Mgr	05/82	100
	Proj Mgr	A	Classified Program	Config Mgt	D/C Seg	Proj Cont	Sche.	05/82	50
	Proj Mgr	A	Classified Program	Proj Cont	D/C Seg	Proj Cont	Proj Cont Mgt	05/82	50
	Proj Mgr	A	D/C Seg	Proj Mgt	D/C Seg	Proj Mgt	Dpy, Proj Mgr	05/82	100

Figure XII.16-1. Personnel Assignments – Project Management



## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Sys Eng A		D/C Seg	Sys Eng	D/C Seg	Sys Eng	SE Mgr	05/82	100
	Sys Eng B		CPIC	Sys Eng	D/C Seg	IWS Eng Spt	Systems Analyst	05/82	100
	Sys Eng B		R&D	Sys Eng	D/C Seg	IWS Eng Spt	Systems Analyst	05/82	100
	Sys Eng A		Proposal Acvitivity	Sys Eng	D/C Seg	S/W Dev	S/W Specs	05/82	100
	Sys Eng C		R&D	Sys Eng	D/C Seg	Eng Spt	Sys Specs	05/82	100
	Sys Eng A		LAPD	S/N Dev	D/C Seg	Eng Spt	Comp Prog Sr.	05/82	100
	Sys Eng B		D/C Seg	Sys Eng	D/C Seg	Sys Eng	Sys Eng	05/82	100
	Sys Eng A		D/C Seg	Sys Eng	D/C Seg	Sys Eng	Sys Eng	05/82	100

Figure XII.16-1. Personnel Assignments – Systems Engineering

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

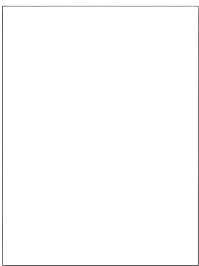

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Support	A	D/C Segment	HW Eng	D/S Segment	HW Dev.	Sys Eng	5-1-82	100
	Support	A	Classified Program	HW Eng	D/C Segment	ADPE	HW Eng	5-1-82	100
	Support	A	D/C Segment	I & T	D/C Segment	I & T	Comm Eng Ing. Mgr.	5-1-82	100
	Support	A	D/C Segment	HW Dev.	D/C Segment	HW Dev.	Trng. Mgr.	5-1-82	100

Figure XII.16-1.  Personnel Assignments - Support

## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev.	C	Classified Program	SW Dev.	D/C Segment	SW Dev.	Program	5-1-82	100
	Dev.	A	LAPD	SW Dev.	D/C Segment	SW Dev.	Comp Sys Spec	11-1-83	100
	Dev.	A	Classified Program	SW Dev.	D/C Segment	SW Dev.	Sr. Pgm.	9-1-82	100
	Dev.	A		SW Dev.	D/C Segment	CPCI Dev Specs.	Comp Sys Specs.	1-1-83	100
	Dev.	A	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Dev. Manager	5-1-82	100
	Dev.	A	D/C Segment	HW Dev.	D/C Segment	HW Dev.	HW Dev. Mgr.	5-1-82	100
	Dev.	A	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Design Specs.	5-1-82	100
	Dev.	A	Classified	Sys Eng	D/C Segment	SW Dev.	SW Specs	9-1-82	100
	Dev.	A	D/C Segment	Sys Eng	D/C Segment	SW Dev.	SW Sys Specs	5-1-82	100
	Dev.	A	D/C Segment	SW Dev.	D/C Segment	SW Dev.	SW Sys Specs	5-1-82	100
	Dev.	A	AFPTU	SD&I	D/C Segment	SW Dev.	Sys Anal Sr.	9-1-82	100
	Dev.	A	Jintaccs	SD&I	D/C Segment	SW Dev.	Sys Specs	5-1-81	100
	Dev.	A	Classified	SW Dev.	D/C Segment	SW Dev.	SW Specs	9-1-82	100
	Dev.	A	Jintaccs	SD&I	D/C Segment	SW Dev.	Comp Sys Specs	9-1-82	100

Figure XII.16-1. Personnel Assignments - Development

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## PERSONNEL ASSIGNMENTS – CURRENT, FUTURE, AND AVAILABILITY

NAME	SKILL AREA	LEVEL	CURRENT ASSIGNMENT		FUTURE ASSIGNMENT COMMITMENT				AVAIL.
			PROJECT	DEPT.	PROJECT	DEPT.	BILLET	DATE	%
	Dev.	A	Office Automation	Net Sys. Instal.	D/C Segment	SW Dev.	Comp Sys Spec.	1-1-83	100
	Dev.	A	Jintaccs	SD&I	D/C Segment	SW Dev.	Sys Anal Sr.	9-1-82	100
	Dev.	A	Space & Control	Word Processing Applications	D/C Segment	SW Dev.	Comp Pgrm Anal Sr	1-1-83	100
	Dev.	B	Cinclant	HW Dev.	D/C Segment	HW Dev	Sys Anal Sr.	9-1-82	100
	Dev.	B	NSA Classified Pgm	SW Dev.	D/C Segment	HW Dev.	Program	9-1-82	100
	Dev.	A	SW Design	SW Dev.	D/C Segment	HW Dev.	SW Design Specs.	5-1-82	100
	Dev.	A	DOD Classified Pgm.	HW Dev	D/C Segment	HW Dev.	Sys Specs	9-1-82	100
	Dev.	A	DOD Classi-	SW Dev.	D/C Segment	HW Dev.	Sys Eng	5-1-82	100

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Figure XII.16.1. Personnel Assignments - Development (Continued)

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111

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*XII.17 For your ongoing and proposed projects, please identify the schedules and the mix of skills by fiscal year projected to staff each project until completion.*

Answer:

For ongoing projects, we have shown schedules by PDR, CDR and acceptance milestones, where appropriate. For proposed projects we have shown workload data only. The data presents workload in the same skill areas defined on page III-6-4 of our Management Proposal. Figure XII.17-1 presents ongoing projects and Figure XII.17-2 shows proposed new and follow-on business.

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<u>PROJECT</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>87</u>
	<b>PDR</b> <b>Δ</b>	<b>CDR</b> <b>Δ</b>	<b>Acceptance – Incrementally to 1986</b> <b>Δ</b>			
Data System Modernization						
Project Management	37	36	36	36	34	-
Systems Engineering	27	27	27	24	20	-
Development	111	99	51	45	44	-
Support	31	31	40	40	33	-
	<b>CDR</b> <b>Δ</b>	<b>Acceptance – Incrementally to 1986</b> <b>Δ</b>				
Global Positioning System						
Project Management	23	23	12	10	7	-
Systems Engineering	17	17	9	7	5	-
Development	56	47	10	6	6	-
Support	33	37	37	32	23	-
	<b>Acceptance</b> <b>Δ</b>					
Space Telescope						
Project Management	6	3	-	-	-	-
Systems Engineering	7	4	-	-	-	-
Development	25	11	-	-	-	-
Support	2	2	-	-	-	-
	<b>Acceptance</b> <b>Δ</b>					
SACDIN						
Project Management	5	1	-	-	-	-
Systems Engineering	3	-	-	-	-	-
Development	12	-	-	-	-	-
Support	13	3	-	-	-	-
WWMCCS						
Project Management	5	5	5	-	-	-
Systems Engineering	18	18	18	-	-	-
Development	-	-	-	-	-	-
Support	2	2	2	-	-	-
Classified Programs						
Project Management	32	20	10	10	6	5
Systems Engineering	23	14	7	7	4	4
Development	94	55	17	14	7	4
Support	31	20	20	20	20	20
Other Projects (under 7 per project)						
Project Management	6	-	-	-	-	-
Systems Engineering	5	-	-	-	-	-
Development	3	-	-	-	-	-
Support	18	-	-	-	-	-

Figure XII.17-1. Ongoing Projects

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<u>PROJECT</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>87</u>
DSM Follow-on						
Project Management	16	19	29	34	34	38
Systems Engineering	12	14	21	24	25	28
Development	34	36	50	52	56	60
Support	27	34	60	74	76	85
Global Positioning System						
Project Management	5	6	8	15	18	17
Systems Engineering	4	4	6	11	13	13
Development	18	20	22	32	42	36
Support	3	4	9	26	27	29
Space Telescope Follow-on						
Project Management	-	2	2	1	1	-
Systems Engineering	-	2	2	-	-	-
Development	-	2	-	-	-	-
Support	-	7	6	3	2	-
WWMCCS & Task						
Project Management	5	6	6	11	11	11
Systems Engineering	20	21	21	39	39	39
Development	-	-	-	-	-	-
Support	5	8	8	10	10	10
MINSTREL						
Project Management	-	4	7	8	8	6
Systems Engineering	-	3	5	6	6	4
Development	-	8	20	25	26	15
Support	-	7	7	7	7	7
FAA						
Project Management	-	15	15	17	23	27
Systems Engineering	-	11	12	13	17	20
Development	-	46	47	60	73	100
Support	-	12	12	12	16	16
Classified Programs (NPIC not included)						
Project Management	7	10	28	28	34	33
Systems Engineering	5	7	20	20	25	24
Development	20	25	95	95	106	104
Support	3	14	14	14	25	22
Other New Business						
Project Management	3	3	22	31	36	63
Systems Engineering	5	5	18	22	26	46
Development	10	10	60	85	100	175
Support	2	2	20	32	38	66

Figure XII.17-2. Proposed Projects

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XIII.1 *How does specific experience gained in the seven identified projects relate directly to specific aspects of the D/C Segment?*

Answer:

Of all the programs in which we are, or recently have been, engaged, we selected only seven because of page limitations. In the actual selection of the seven programs we used the judgment of a large number of very experienced personnel who considered many obvious and subtle factors. We attempted to characterize the D/C Segment portion of the NPIC Development Program into a group of generic attributes that: (1) characterize the technical and management challenges to be faced; and (2) allow comparisons among programs that otherwise are dissimilar because of different applications. We believe that the selected projects are comparable and relevant to NDS. All of the seven compare in at least three of the four attribute groups, and three of them compare in all four. The four attributes are:

1. Size. Software size implies a certain amount of technical and management complexity. By itself, of course, it can be very misleading; but coupled with the other attributes of the effort, it is a meaningful descriptor. We used a threshold of 1 M source lines of code as a threshold level of comparison between each of the seven related projects and NDS. If the related project exceeded that amount of developed or integrated software, we concluded it was comparable to NDS for this aspect.
2. Scope. For this attribute we considered: (1) the development of specialized user work stations; (2) involvement with multiple and complex interfaces; and (3) requirements for very large data base management. Many systems satisfied one of these criteria; all of the seven selected satisfied at least two, and are relevant to NDS in this aspect.



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3. Technical Performance. A number of criteria were included in this attribute. For each program it was first determined if a particular criteria was applicable, then a subjective determination as to its difficulty or complexity was made vis-a-vis NDS. The specific criteria for this aspect are:
- (a) System design
  - (b) Software and/or hardware development
  - (c) Integration and test
  - (d) Responsibility to transition a development system into an operational system. Of particular significance was whether this was in an already operational environment or a new activity
  - (e) Operations and maintenance of the delivered system

Six of the selected programs meet at least three of these criteria, and one meets two.

4. Methodologies Employed. Included in this attribute are techniques, e.g., structured analysis, structured programming, performance modeling, use of formal program reviews. All of the seven programs meet at least two of these criteria.

Within the space limitations, we attempted to summarize the relevance of each of the seven programs to NDS -- by the above criteria -- both on Figure VII-1 and within each of the brief project descriptions. Figure XIII.1-1 expands on that in the proposal, showing each program and, in our judgment, which of the above-described criteria within each aspect it meets, in such a way as to be relevant to NDS.

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	SIZE: ≥ 1M LOC		SCOPE				TECHNICAL PERF.						METHODOLOGIES EMPLOYED				
			– User Work Station	– Complex Interfaces	– Very Large DBMS		– System Design	– Software/Hardware Dev	– Integration & Test.	– Transition	– O&M		– Structured Analysis	– Structured Programming	– Perf. Modeling	– Formal Program Review	
● Launch Processing Sys.	X	X	✓	✓	✓	X	✓	✓	✓	✓		X		✓	✓	✓	
● Shuttle Data Processing Complex	X	X	✓	✓	✓	X	✓	✓	✓	✓	✓	X		✓	✓	✓	
● Applications Development/CAMS		X		✓	✓	X		✓	✓	✓	✓	X		✓		✓	
● STAR/ALLSTAR/DORIC		X		✓	✓	X		✓	✓	✓	✓	X		✓		✓	
● ASC		X		✓	✓	X		✓	✓		✓	X	✓			✓	
● BETA Test Bed		X	✓	✓		X	✓	✓	✓			X	✓		✓	✓	
● AFSCF Computer Program Integration	X	X	✓	✓		X			✓	✓		X	✓			✓	

Figure XIII.1-1. Related Experience Comparison

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